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FURTHER OBSERVATIONS ON AN EPIDEMIC OF ASEPTIC MENINGITIS AT PORT AUGUSTA.

By J. S. COVERNTON and J. A. R. MILES,
Adelaide.

DURING the months of July and August, 1952, there occurred at Port Augusta a number of cases of aseptic meningitis. There was one fatal case from which was isolated a filter-passing organism. Its physical and biological characteristics and its serological reactions have been reported by Miles and Dane.

The Material.

From June 24 to September 24, 1952, there were 41 patients under treatment at Port Augusta for symptoms which may be broadly grouped as those of aseptic meningitis. This may be defined as an acute infection of the meninges in the absence of any focal cause, characterized by a rapid onset of symptoms of meningeal irritation, together with pleocytosis in the cerebro-spinal fluid and the absence of bacteria from films and cultures; it runs a benign course.

Of these 41 cases, five have been serologically proved to be cases of mumps encephalitis; seven others were diagnosed as mumps encephalitis on clinical grounds. The remaining 29 comprised cases of what we have called Port

Augusta meningitis. (Prior to the epidemic period, from February 5 to June 5, 1952, nine people had been under treatment at Port Augusta Hospital or the Northfield Infectious Diseases Hospital for symptoms suggesting an acute virus infection of the central nervous system. These cases were regarded as either definite or probable cases of acute anterior poliomyelitis. All differed materially from the syndrome presented by the 29 cases of the epidemic.)

Age Incidence.

The disease occurred much more frequently in the younger age group, as will be seen from the following figures: birth to four years, eight cases; five to ten years, 16 cases; 11 to 20 years, two cases; 21 to 30 years, three cases. Thus 24 of the 29 cases occurred under the age of ten years.

Sex Incidence.

Males predominated, 17 being affected, whereas there were only 12 female patients.

The Syndrome.

The onset was sudden. There were no prodromata. Of the initial symptoms the most common was headache (53.6%), the next most common being vomiting. Various other early complaints included joint pains, giddiness, coryza, drowsiness and muscle pains. Whether or not headache was the initial complaint, it soon became the predominant symptom and was present in 25 of the 29 cases.

The onset of headache was accompanied by fever, the temperature ranging between 102° and 104° F., lasting for three or four days and falling by lysis.

Associated with headache and fever was back and neck stiffness. Back stiffness was more frequent than neck stiffness, but both might occur in any one case.

The stiffness was never severe enough to suggest purulent meningitis. It was usually short-lived and subsided in two or three days or less.

In four cases (including the fatal case) a rash appeared early in the disease and lasted for two days or less. The rash was widespread, on the trunk mainly, and consisted of punctate erythematous patches which did not itch. It was said to be "like German measles" by one of the mothers, who was a trained nurse.

in titre between the acute and convalescent or late stages of the disease.

Duration of Illness.

The illness was of short duration. In 21 cases in which accurate estimates could be made, 12 patients were well in seven days and 18 were well in fourteen days. In only one case was the illness prolonged for more than three weeks, and that was the fatal case.

Sequelae.

Twenty patients were reexamined on February 21, 1953, approximately six months after the illness. Three other patients were examined on April 20.

We were fortunate to have the help of Dr. Lansell Bonnin in making these examinations. No findings indicating

COURSE OF PORT AUGUSTA MENINGITIS EPIDEMIC.

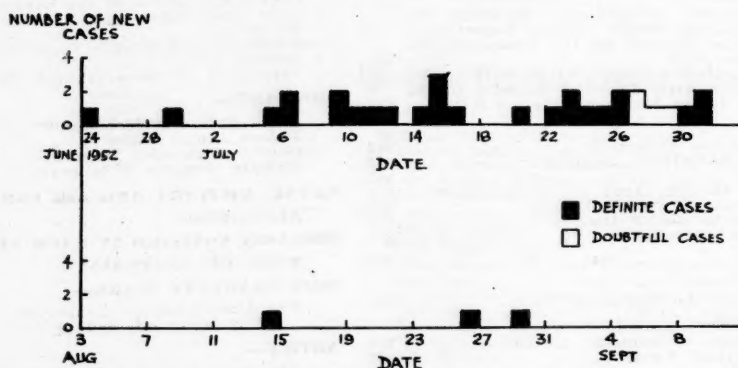


FIGURE I.

The commonest symptoms noted in the course of the epidemic are listed here: headache, 25 cases; vomiting, 23 cases; fever, 17 cases; stiff back, 15 cases; stiff neck, 11 cases; drowsiness, eight cases; sore throat, six cases; aching behind ear, four cases; aching in parotid region, three cases; pain in back, three cases; nausea without vomiting, two cases; cough, two cases; giddiness, two cases.

In addition, mention has been made by individual patients of muscle pain, anorexia, bleary eyes, photophobia, coryza and delirium.

Lumbar Puncture.

Lumbar puncture was performed in 25 cases. In 18 excess of cells was found, the count varying from 50 to 450 cells per cubic millimetre. Lymphocytes predominated in all specimens. In most they were the only cells present, but in some up to 40% of cells were polymorphonuclear. Usually these were the specimens which contained the larger number of cells.

No abnormality was detected in the protein, chloride or sugar contents of any of the fluids. The pressure was not measured, but there was never a very gross increase in the rate of flow to indicate a raising of pressure. All the specimens of fluid were taken in the first thirty-six hours of the illness, and lumbar puncture was not repeated after recovery.

Serological Investigations.

Serum from six of the patients was tested for complement-fixing antibodies to an antigen prepared from the yolk sacs of embryonated eggs infected with the virus isolated from the fatal case, as previously reported by Miles and Dane (1953). The results were as follows: serum from six patients was tested and antibodies were demonstrated in five specimens. Of these five patients, four showed a rise

muscle weakness were detected by either Dr. Bonnin or one of us (J.S.C.).

One child exhibited a dropped shoulder, which had been present before and was considered postural. Two children had unequal measurements of the calves of insignificant degree. A fourth child (W.R.) was found to have bilateral winged scapulae and slightly weak sterno-mastoids on both sides.

Twelve of these 23 patients had been examined independently in the physiotherapy department of the Adelaide Children's Hospital or the Northfield Infectious Diseases Hospital immediately after their illness. Of these, three children had been noted to have a limp which subsequently disappeared. The child W.R. had been examined by Dr. N. P. Wilson, who reported weakness and wasting of the thigh four months after the illness. The remaining four children showed vague bilateral weakness and mild postural defects, which could not be accepted as evidence of muscular disability.

No signs of behaviour disturbance or organic nervous disorders were discovered, although complaints of irritability and undue fatigue were not uncommon in the first three months after the illness.

The Course of the Epidemic.

The first case which we have regarded as belonging to this epidemic was that of a child, aged seven years, who was attending the public school and who became ill on June 24, 1952. Earlier in the year nine patients suffering from the disease with central nervous system symptoms had been examined in Port Augusta. Four cases—two in February and two in April—were clear-cut cases of acute anterior poliomyelitis. Of the remaining five cases, three occurred in April and one was almost certainly a case of non-paralytic poliomyelitis; the others were most likely

the same. Two other cases of mild disease, which may well have been benign aseptic meningitis, occurred on June 3 and 5.

No laboratory investigations were performed in these cases; but they could have been cases of the same disease as those in the epidemic proper. They have been excluded purely because they did not come into the epidemic period, although they may easily have been forerunner cases.

The second case, on June 24, was that of a young married woman, aged twenty-three years, who had no apparent contact with the first case, and the third and fourth cases were those of children, aged two and four years, who had no obvious contact with any of the other cases. They became ill on July 5 and 6.

The main series of school cases began with two cases on July 9 and one on July 11 (one of these patients was in hospital at the time of the onset and his contacts will be considered later). On July 15 there were two more cases in the same grade as those with onset on July 9. On July 20 there occurred a further case in the same grade, and on July 22 a second case in the same grade as that of July 11. Cases then occurred in various grades on all but two days until July 31.

The case of J.S. is of special interest. He was admitted to hospital on July 4 with *otitis media*, and his meningitis developed in hospital on July 9. Four people who had contact with him in hospital developed the disease. One patient, R.P., had been in hospital for six weeks with an unrelated complaint. The onset of his illness was July 14. A sister in the hospital and another patient in the ward developed the disease on July 15. G.C., who died of the disease, was admitted to the same ward on July 11 for respiratory symptoms and was discharged again on July 14. The date of onset of his illness is not clear, but it was July 16 or 17. He died on August 6. The sisters of G.C., who died, developed the disease on July 20, 23 and 24 respectively.

The course of the whole epidemic is shown in Figure I. A notable feature is the way in which the cases up to July 22 fell into five-day groupings.

The Method of Spread.

We did not find any satisfying explanation of the spread of the agent except from case to case. The cases occurred in widely separated houses, new and old, both in Port Augusta and in Port Augusta West on the opposite side of the gulf, joined to the main town by a causeway about 600 yards in length. Few of the houses were known to harbour mice, and the serological investigations did not suggest that lymphocytic choriomeningitis was responsible for the outbreak. The season was winter, and flies were not numerous or troublesome, and mosquitoes were absent. Nearly all houses were fly-screened. Cases occurred both in families which used fresh milk and in those which used only powdered milk, and they occurred both in those which used rain water for cooking and drinking and in those which used mains water for all purposes. No food could be incriminated, nor did any gatherings, other than those of the public school, appear to be related to the spread of the disease.

The evidence of case-to-case spread is strong, although we were not able to trace contacts for all cases. The hospital cases and the outbreak in family C. give a particularly good picture. The child J.S. was admitted to hospital five days before he developed meningitis. Among his contacts, R.P. had been in hospital for six weeks and left two days before J.S. showed meningitis. He developed a similar syndrome seven days after leaving hospital and having had no other known contact with the disease. A sister in the hospital and another patient, S.L., developed the disease six days after J.S. G.C., the child who died, was admitted to hospital two days after J.S. had developed meningitis, and was discharged from hospital three days later. He developed meningitis about six days after his admission to the same ward as J.S. and while at home. He was at home from July 14 to 16, and his sisters developed the disease on July 20, 23 and 24.

These facts, together with the groupings of the cases at the public school and the general grouping of cases in

the first half of the epidemic period, strongly suggest a disease spread by personal contact with an incubation period ordinarily between five and ten days, occasionally perhaps as long as fifteen days.

Discussion.

A discussion of this epidemic really resolves itself into a discussion on the differential diagnosis of aseptic meningitis.

The first impression was that this was an epidemic of atypical mumps. In such epidemics cases occur in which there may be little or no parotid swelling and the encephalitis is the predominating lesion. A number of such epidemics have been reported.

The diagnosis of lymphocytic choriomeningitis was considered, but discarded on account of the relatively low cell count in the cerebro-spinal fluid, the absence of serological evidence, and the infrequent presence of mice in homes from which these cases came. Acute poliomyelitis in an abortive form was of course initially suspected. The rapid recovery and the absence of paralytic sequelae made this unlikely, and this opinion was confirmed by the absence of any rise in titre or complete absence of poliomyelitis antibodies in the paired sera examined. Nor could we find any evidence to establish the diagnosis of Murray Valley encephalitis either by epidemiological or by serological investigations.

It is therefore suggested that this epidemic is the result of an infection with the virus described by Miles and Dane. It is considered that this virus causes in most instances mild aseptic meningitis without sequelae. Occasionally it may be fatal; but in the fatal case in this series the child was a mongol and had been ailing for some weeks with infections of the ear and respiratory tract and was therefore in a highly susceptible state. The condition is highly infectious, is spread by direct contact, and has an incubation period of five to ten days.

During the preparation of this paper a second epidemic of this disease has occurred, and has been proved to be due to the same virus. In this epidemic there was no fatal case and no muscular sequelae were noted. Nevertheless, the occurrence of temporary limps and mild paresis of an evanescent nature may be compatible with a myositis which, we believe, is a mild counterpart of the destructive lesions in the muscle of the experimental animal described by Miles and Dane.

Summary.

1. An epidemic of aseptic meningitis occurring at Port Augusta has been reported.
2. The symptoms of the disease have been described.
3. An epidemiological investigation suggests that it has an incubation period of five to ten days and is spread by direct contact.

Acknowledgements.

We wish to thank Dr. J. R. Thompson, Dr. B. Furler and Dr. A. Koop, all of Port Augusta, for their kindness and cooperation in arranging facilities for the completion of this investigation.

Reference.

- MILES, J. A. R. and DANE, D. M. S. (1953), "Port Augusta Meningitis", *M. J. AUSTRALIA*, 1: 884.

THE USE OF THERMOSTATICALLY CONTROLLED ELECTRIC HEATING PADS IN A MATERNITY NURSERY.

By CLAIR ISBISTER, M.R.A.C.P., D.C.H. (London), and JAMES ISBISTER, M.R.C.P., M.R.A.C.P.

From the Unit of Clinical Investigation and the Department of Obstetrics, The Royal North Shore Hospital of Sydney.

WHEN the new-born baby gives up its parasitic existence, one of the first adaptations it has to make to its new environment is to maintain its body temperature in spite of the higher or lower temperature of the surrounding atmosphere. The normal baby adapts itself quickly, requiring

no more than the usual enveloping blanket and cot coverings; but there are many babies that need extra warmth for the first few hours or days. It may be many weeks before the premature baby can manage without extra warmth, and every baby that has had a stormy entry into this world will have difficulty in stabilizing its heat-regulating mechanism. It may have had a long and difficult birth, have required resuscitation on delivery and had a period of anoxæmia; it may be shocked by a precipitate delivery or merely suffering from the after-effects of anaesthesia. In all these cases it is important to see that the babies do not get cold, and almost equally

a dairy thermometer beside the baby and changing of the bags as necessary. It was being used in the premature ward, an air-conditioned nursery with room temperature and humidity kept constant. A small premature baby weighing under three pounds was being nursed by general trained nurses studying for midwifery certificates under the supervision of an experienced mothercraft trained sister. This constitutes almost ideal conditions. The nursing staff recorded the baby's rectal temperature and the temperature of the cot thermometer every four hours. The hot-water bags were changed according to the cot thermometer readings, though it was realized that unless nurses were very careful the thermometer could vary in position and make the readings inaccurate. It had previously been decided that changing of the bags according to the baby's rectal temperature was unsatisfactory, because there was a lag in the rise of the baby's temperature, easily demonstrated in ward records, and because no allowance was made for variations in temperature due to pathological conditions.

2. The electrically heated pads used were of two types: A: "Norvic" single heat pad (240 volts), used with a "Sunvic" sealed glass thermostat set at 95° F. with a safety thermostat in the heating pad. B: "Super-glow" heating pad operated on six volts, supplied from a 240-volt transformer. The transformer also had output tappings of eight and ten volts, which were not used at all. By the use of these voltages, higher maximum temperatures could have been obtained. The thermostat used was a "Satchwell" incubator type with an adjustable range of 70° to 100° F. The "Sunvic" sealed glass thermostat was not used, as it could not carry the higher current demanded by the lower voltage.

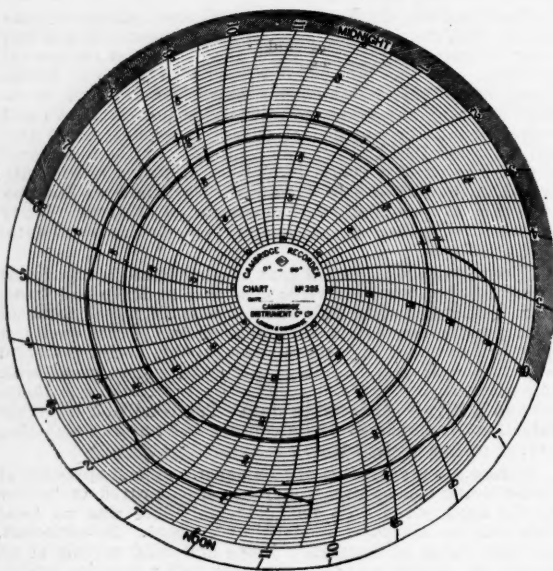


FIGURE I.

important to see that they are not overheated, as a baby's temperature will swing with the external environment.

One occasionally reads of medico-legal cases in which babies have been burned accidentally. We may be sure that only a minority of these cases reach the public Press and that these accidents are more common than is generally realized. Accidents of this type most commonly occur (a) when a hot-water bag has leaked or come into contact with the child's skin, (b) when the enveloping blanket has been left to warm on a steam heater and been wrapped around the child without the temperature first being tested. No baby tolerates burns well, and to the shocked or premature baby even a superficial burn may mean death, so that any safe device for warming cots that reduces the range of human error is worthy of consideration.

The objects of this study were therefore as follows: (i) to determine the temperature variation in babies' cots warmed by hot-water bags and regulated according to cot thermometers; (ii) to determine the temperature variation in babies' cots warmed by thermostatically controlled electric heating pads; (iii) to determine any dangers associated with the use of thermostatically controlled electric heating pads.

Method of Study.

A dual recording thermometer (Cambridge Instrument Company) was used to record the cot and atmospheric temperatures for twenty-four hours. One bulb was placed in the cot beside the baby and the other outside the cot. The face of the recorder was sealed over with paper so that the chart could not be seen until it was removed.

1. The cot warmed by hot-water bags had one bag along each side and one at the foot, regulated by observation of

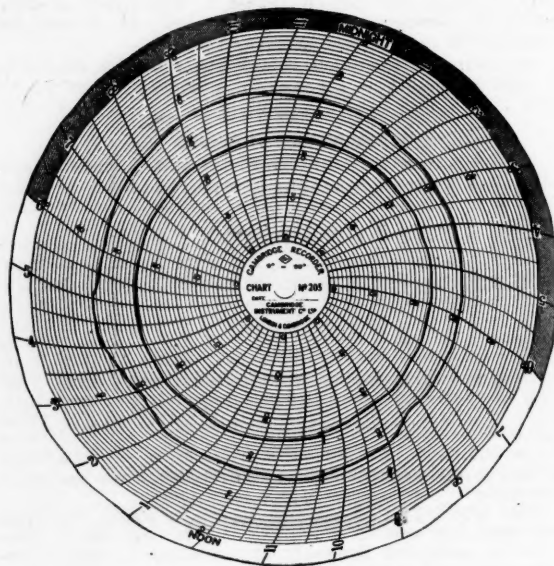


FIGURE II.

The heating pads were first tested without babies in the cots in the premature ward, and then in the general nursery, where the external environment was not regulated. Babies were then nursed in the cots, and the temperature was recorded under the premature ward and general ward conditions with the chart covered as described above.

Investigation of Safety.

The dangers are electric shock, overheating and cross-infection.

Heating pad A was used covered by rubber sheeting and the cot was earthed. No pins were allowed in the cot.

Heating pad B was used with a sterile cover and was tested with the thermostat left out to determine the maximum temperature which it would reach in a cot made up with the usual bedding. This pad was put into continuous use in the labour ward cots, on operating tables and for blood transfusions.

Results.

1. Cots warmed by hot-water bags were tested continuously for one week. All records showed considerable variation in cot temperature, the range in the chart in Figure I being 14.5°C . and in other charts 11°C . Abrupt

without rubber sheeting, and was safe from shock when liquid conductors such as urine or blood were spilt on it. (b) It was considered unsafe to have 240 volts in the pad, the main danger being shock from inadvertent contact with metal conductors such as safety-pins passing through the pad. (c) Gross overheating could not occur with pad B, operating on 10 volts, because with no thermostatic control the maximum temperature reached was 39°C . (100°F). On six volts the maximum temperature was 35°C . (95°F). (d) Heating pad B can be sterilized by immersion in anti-septic solution or by autoclaving, the former method being the more satisfactory.

Pad B has now been in constant use for over two years with a "Satchwell" thermostat, with completely satisfactory performance and no harmful effects. On a few occasions the thermostat has been left out of the cot, with no untoward effects on the baby. The pad has been connected to a motor-car battery and was used by us to transport a premature baby to hospital.

Summary and Conclusions.

1. A Cambridge recording thermometer was used to determine the efficiency and safety of hot-water bags used in the orthodox way, and of two types of thermostatically controlled electric heating pads for warming babies' cots in a maternity nursery.

2. The cot temperature variation when hot-water bags were used to warm cots in premature wards was such that this method may be considered inefficient for the following reasons: (a) Greater nursing care and supervision than are usually practicable are necessary to obtain a moderate degree of temperature control. (b) The routine

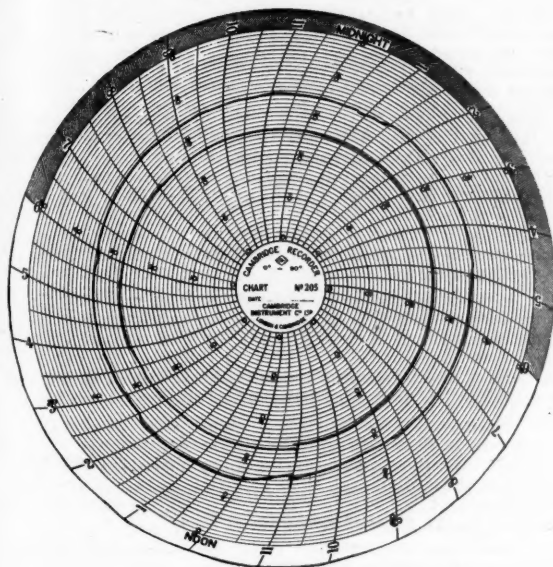


FIGURE III.

risers of 4° to 14°C . followed changing of bags, though routine instructions were to change one bag at a time. These instructions were carefully followed in the day-time. The sudden rises of 10° to 14°C . that occurred when the busy night staff changed the hot-water bags before going off duty can be interpreted only as failure to obey these instructions. The nursing staff were then informed of the foregoing results, and all efforts were made to maintain an even temperature, the thermometer was checked at half-hourly intervals by the sister, and the night staff was given precise instructions. The resultant chart (Figure II) still shows fairly rapid rises of 3° to 4°C . when bags were changed singly, and a total variation over the day of 4.5°C . The external environment in all cases varied less than 2°C . over day and night. Four-hourly routine recordings of cot temperatures by nurses revealed a variation of 7°C . during the recording of the chart in Figure I, an error of 7°C . During the recording of the chart in Figure I the baby's temperature varied 3° , though the baby was four weeks old.

2. Heating pad A was used in a premature ward with the baby kept at an even cot temperature with 2°C . variation over the day, and without a baby in the cot there was less variation (Figure III). Heating pad B with a "Satchwell" thermostat had a greater differential temperature, and the cot temperature fluctuated 2°C . every hour, but showed a maximum variation of 3°C . over the whole day with a baby in the cot and an unregulated external temperature that showed 4.5°C . variation (Figure IV).

3. Heating pad A was given up in favour of heating pad B on the following safety grounds: (a) The Sydney County Council prohibited the use of heating pad A because it did not satisfy regulations requiring that such heating pads should be waterproof. Heating pad B was used

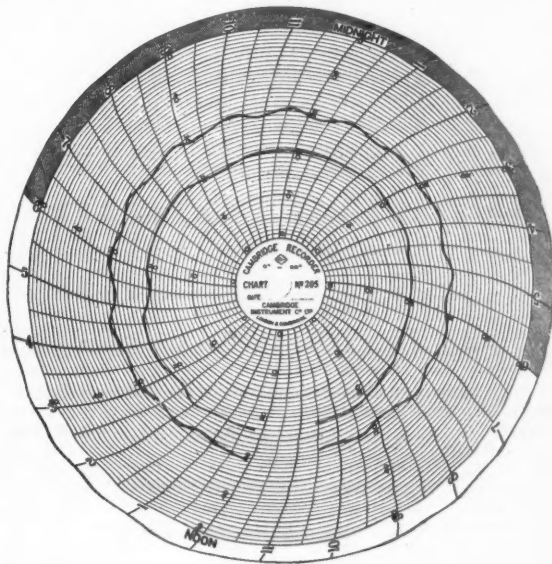


FIGURE IV.

method of recording cot temperatures by the use of a dairy thermometer proved inaccurate. (c) A greater variation in the baby's body temperature occurred than could be considered safe at one month. Had this child been a newborn premature baby, completely unable to regulate its body temperature, this could have represented a variation of over 10°F . in the baby's temperature with corresponding variations in metabolic rate.

3. The "Norvic" heating pad with a "Sunvic" fixed thermostat was efficient, providing a stable cot temperature with a minimum of nursing supervision; but it was regarded as dangerous because it operated directly on 240 volts and was not waterproof.

4. The "Super-glow" heating pad used with a "Satchwell" variable thermostat was efficient, providing a stable cot temperature with a maximum variation of 3° C., comparable with incubator conditions, at much lower cost. It can be adjusted to give any cot temperature desired between 70° and 100° F. It is safe, as it operates on six volts, and is waterproof and shockproof, and can be sterilized.

5. The "Super-glow" heating pad has now been in continuous use in the labour ward nursery for over two years. It is concluded that some technical attention towards the provision of a more compact and closely attached thermostat is desirable. This heating pad could be used in small

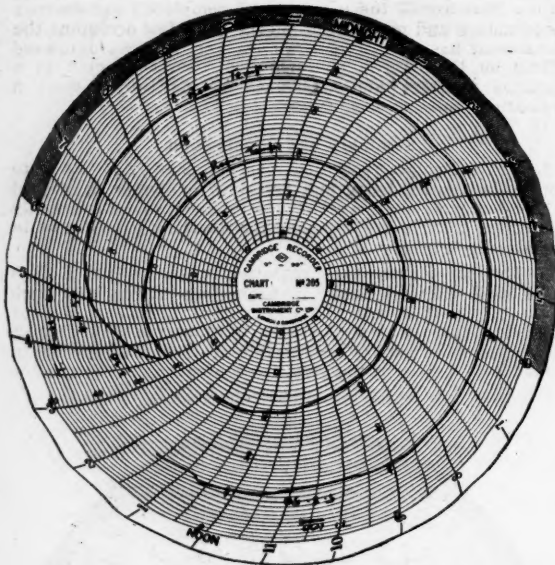


FIGURE V.

hospitals instead of incubators, for the transport of sick babies and premature babies, in routine labour ward and nursery care of the shocked and premature baby, and during operations on babies.

Acknowledgements.

Our thanks are due to Dr. Wallace Freeborn, General Medical Superintendent of the Royal North Shore Hospital of Sydney, for permission to carry out this investigation, to the members of the nursing staff of the obstetric department for their cooperation, and to Dr. W. W. Ingram, Director of the Institute of Medical Research, for help with and criticism of this paper. We should also like to thank Mr. I. N. McLaughlin, of Industrial Control Company of Australia, for his advice, Industrial Control Company of Australia for donating a cot-size "Super-glow" heating pad, and Denham, Proprietary, Limited, for supplying a "Norvic" heating pad as a sample. We are also indebted to the Department of Physiology, University of Sydney, for the loan of the Cambridge recording thermometer.

INDUSTRIAL DERMATOLOGY.¹

By IVAN M. WARTZKI, M.B., B.S., F.R.A.C.P.,
Honorary Dermatologist, Prince Henry's Hospital,
Melbourne.

THE following remarks are based on twenty years' experience in the practice of dermatology and the personal opinions and conclusions arrived at by the writer.

¹ Read at a meeting of the Section of Industrial Medicine of the Victorian Branch of the British Medical Association, June 16, 1953.

Diagnosis.

The first and most important thing in industrial dermatology, as in any other branch of medicine, is to arrive at an accurate diagnosis, and the following non-occupational dermatoses must be excluded, each of which has from time to time been presented to the writer for an opinion with regard to eligibility for workers' compensation: psoriasis; lichen planus; seborrhœic dermatitis; the pyoderms, such as *impetigo contagiosa*, *syphilis barbae* and infectious eczematoid dermatitis (an eczematous eruption due to sensitization to staphylococci and streptococci and spreading from an infected wound or scratch not acquired from the patient's occupation); *dermatitis artefacta*; *dermatitis medicamentosa* from barbiturates, iodides, bromides, sulphonamides and many other drugs taken for reasons of ill health not connected with the patient's occupation; scabies; *pityriasis rosea*; the exanthemata, such as rubella, morbilli, scarlet fever, and varicella.

When a diagnosis of dermatitis or eczema has been arrived at it is then necessary to exclude Besnier's prurigo, that is, the asthma-eczema-prurigo syndrome, by its distribution in the antecubital and popliteal fossae and on the face and by the history of eczema in infancy and past attacks of asthma in the patient and of asthma or eczema in the family. Contact dermatitis can, of course, occur in these subjects in addition to their eczema and as a result of their occupation.

It is also necessary to exclude localized circumscribed neurodermatitis by the distribution and clinical appearance of the eruption; the most common sites of this are, in the female, the nape of the neck and, in the male, the extensor surfaces of the forearms, especially the left on right-handed people, but it may occur in any situation accessible to rubbing.

History.

When all the above-mentioned conditions have been excluded and a diagnosis of dermatitis has been arrived at, the history of the attack should be carefully reviewed in relation to the following factors:

1. Duration. Did it start after the patient commenced the present process in his occupation?

2. The nature of the work. Did it entail actual exposure to well-known primary irritants and/or well-known sensitizers?

A few years ago a young girl presented for examination with the statement that she was employed by a photographic firm and was suffering from "photographers' dermatitis". On investigation of the details of employment it appeared that she was engaged in packing cardboard cartons; inside these were shavings, into which were packed cardboard packets containing films enclosed in paper and covered with lead foil. That was as near as she ever got to handling anything to do with photography, and the dermatitis of her hands from which she was suffering turned out to be due to a soap with which she was doing the laundry at home in her week-ends.

3. The site of the first appearance of the rash. Was it on the parts mostly exposed to the irritant—for example, the hands, especially the dorsa (which are more vulnerable than the palms, as they have less protection than the palms, owing to a thinner *stratum corneum* or horny layer of the epidermis), or the forearms, if the patient works with his sleeves rolled up, or the face, especially the eyelids?

4. Whether other workers in the same process suffer from the same condition. If they do, this is strong evidence of the condition being occupational; but if they do not, this does not exclude occupation as the cause, as some skins, especially seborrhœic or hyperhidrotic skins, are more predisposed to dermatitis than others.

5. If the irritant is a fine powder or a gas. In this case the parts with which the clothes are in close contact will most likely be affected—for example, around the waist, under the arms and under the socks.

6. If the patient suffers from hyperhidrosis (excessive perspiration). In this case, as previously stated, he is more likely to be affected by irritants, especially dusts or powders, as they tend to become concentrated on the sweaty parts.

Sensitization.

It must be remembered that a patient may tolerate an irritant for some considerable time, even years, and then become sensitized to it, so that the fact of his having handled the same things with impunity for years previously does not exclude occupational dermatitis as a diagnosis in his present attack.

Patch tests are of limited value. A positive patch test result shows that a patient reacts to the substance and in the concentration used, but it does not necessarily mean that that substance is the cause of his present attack; on the other hand, a negative patch test result does not exclude the tested substance from being the cause, as the conditions of his employment cannot be reproduced when the test is done.

During the last war it was shown that with soldiers suffering from the so-called khaki dermatitis, patch tests with chrome salts and articles of khaki clothing frequently gave negative results. Friction, perspiration and sometimes psychosomatic factors, such as anxiety and fear, were adjuncts necessary to produce positive test results.

Soldiers with dermatitis of the feet due to wearing khaki woollen socks gave negative patch test results with clean washed socks, and positive results with sock material moistened with their own sweat.

Patch tests should never be done with known primary irritants, such as kerosene, turpentine, strongly acid or alkaline solutions, and patch tests should not be done during the very acute widespread or generalized stage of an eruption.

Psychosomatic Factors.

A rash may start as an occupational dermatitis and may be perpetuated deliberately by the patient's own efforts in the case of a malingerer who does not like work or one who craves sympathy; but this is usually easily detected.

Of much more importance is the case in which dermatitis starts as the result of contact with noxious substances handled in the course of the patient's usual occupation and then becomes perpetuated as a neurodermatitis due to psychosomatic factors, such as anxiety, worry and a feeling of insecurity following on the loss of the man's time, the possibility of his having to change his occupation when he is not trained or fitted to any other occupation and is too old to start learning another trade, and the fear of recurrences of his rash.

This unhappy state of affairs is unfortunately sometimes brought about or accentuated by the attitude of some employers and/or insurance companies, who, failing to appreciate the psychogenic factors involved, harass and harangue the distressed patient, insisting on frequent examinations and reexaminations by many different doctors—dermatologists, surgeons and others—to the detriment of the patient and the embarrassment of the attending doctor, who naturally finds it almost impossible to cure his patient whilst these conditions exist.

One such patient is under my care at the moment, and I feel certain that his tardy response to treatment is due to these factors.

Site of Lesion.

It must be remembered that in exceptional but quite definite instances a rash may appear on the face or elsewhere before occurring on the hands, even though the hands are most in contact with the irritant.

A most instructive example of this phenomenon is a patient at present under my care.

A young man suffered some years ago from repeated attacks of acute dermatitis of his face which was eventually found to be due to a plant, *Rhus succedanea*. The plant was removed from his garden, and he remained free of his attacks for several years.

Some days ago he presented suffering from an acute oozing and crusted dermatitis of his face and neck with oedema of his eyelids. This had followed his having rubbed some *Rhus* leaves, borrowed from his uncle's garden, on the dorsum of his left hand to see if he was still sensitive to the plant.

The rash occurred on his face a few hours after his doing this and was extremely acute with oedema of his eyelids (his eyes were quite closed), but he had no rash on the back of his left hand, which he had tested. It was not until four days later that he developed a rash on the site tested, that is, the dorsum of his left hand, and he then developed an acute vesicular eruption on a very erythematous base.

One feels sure that with a less fulminating eruption due to a lesser irritant a similar but much milder eruption can occur on the face without the appearance of an eruption at all on the hands, which primarily come into contact with the lesser irritant.

Indirect Association with Occupation.

Eruptions frequently occur indirectly as the result of the person's occupation; for example, a cut, abrasion or burn may be treated at work with an antiseptic or antibiotic and a rash be thereby produced which must be accepted as due to the worker's occupation.

The position is similar with internal or parenteral administration of drugs or antibiotics, an example of which was referred to the writer for investigation recently.

A man was operated on for inguinal hernia, which was admitted as being the result of his occupation. During convalescence he developed an upper respiratory tract infection and bronchitis attended with much coughing and the risk of rupture of his wound. For this he was given penicillin injections, and it was later discovered that after previous penicillin injections several years previously he had developed urticaria. On examination he had widespread urticaria, which had developed several days after his penicillin injections had been stopped.

The opinion given was that if his hernia was admitted as being due to his occupation, then his claim for compensation in respect of his penicillin urticaria must also be admitted.

Clinical Signs of Dermatitis.

The clinical signs of dermatitis are well known to all of you, but to refresh your memories the following stages and signs occur.

The acute stage is attended by erythema, sometimes oedema, of the parts (especially in the loose tissues of the eyelids and genitals—scrotum, penis, labia majora, et cetera), vesicles, oozing, crusting and (if secondarily infected with streptococci) impetiginization or (with staphylococci) pustulation.

The subacute stage is attended by unruptured vesicles, lesser erythema and scaling.

The chronic stage is attended by scaling, fissuring and often lichenification or thickening of the epidermis, and frequently pigmentation due to oxidation of the keratin of the epidermis with the formation of melanin.

Other Conditions.

Besides dermatitis the following conditions have occurred from time to time in one's practice and have been considered to be due to the patient's occupation.

Tinea profunda, kerion or animal ringworm occurs as an occupational hazard in those dealing with animals or their skins.

Bockhart's impetigo, that is, superficial pustular folliculitis, and also furuncles are met with in those handling heavy oils in their occupation. These occur on the hairy parts, such as the forearms, thighs and legs.

Tar acne occurs in asphalters and tar workers.

Chlorine acne occurs in those exposed to chlorine—for example, those engaged in the manufacture of batteries and electrical workers.

Actinomycosis occurs in those handling animals or infected grain, such as farmers.

Erysipeloid of Rosenbach occurs in those handling uncooked animal matter, possibly decomposing. It occurs in butchers, fishmongers and cooks.

Verruca necrogenica, a tuberculous wart-like lesion, occurs in those handling animals, such as slaughtermen and butchers. It can also occur from post-mortem examinations.

Milker's nodes result from a virus infection contracted from cows. Tar epitheliomata, either single or multiple, occur in tar workers. Epithelioma of the scrotum due to soot is seen in chimney sweeps.

Conclusion.

In conclusion, each case must be considered on its merits after a detailed history has been taken and an accurate diagnosis made.

It is the writer's opinion that if the condition is a dermatitis, and if the person's occupation involves handling a primary irritant or a sensitizer, or if his occupation is included in those listed above and he suffers from any of the corresponding hazards mentioned, then his condition will probably have to be considered as due to that occupation unless it can be proved to be otherwise.

THE LUMBAR INTERVERTEBRAL DISK LESION.¹

By A. R. MURRAY, F.R.C.S. (Edin.),
Brisbane.

THE fact that sciatica may be associated with some form of intervertebral disk disease was probably first demonstrated by Wirchow in 1857, when he described a case of sciatica caused by a tumour of the disk. The association of sciatica with mechanical changes in the disk was first demonstrated by Goldthwaite in 1911, when he recorded a case of subluxation of the lumbo-sacral joint with displacement of nuclear tissue.

From 1911 until 1933 idiopathic sciatica was still believed to be due to interstitial neuritis, but evidence was accumulating to show that irritation of an intraspinal nerve was the cause in at least some cases. Most of the demonstrable lesions were considered to be extradural chondromata.

A dramatic change in the conception of sciatica came about when, at the annual meeting of the New England Surgical Society at Boston in 1933, Mixter and Barr (1934) read a paper entitled "Rupture of the Intervertebral Disc with Involvement of the Spinal Canal". The authors stated that, after operating on a number of disks, they investigated cases of spinal cord tumours treated at the Massachusetts General Hospital and in their own private practice. They said that they found a surprisingly large number of lesions classified as chondromata to be in truth not tumours of cartilage but prolapses of the *nucleus pulposus* or fracture of the annulus.

They arrived at the following conclusions: (i) Herniation of the *nucleus pulposus* into the spinal canal is a not uncommon cause of symptoms. (ii) The lesion has frequently been mistaken for cartilaginous neoplasms arising from the intervertebral disk. (iii) In reality, rupture of the disk is more common than neoplasm (in their series, in the ratio of three to one). (iv) A presumptive diagnosis may be made in many instances, and operation, whether for this or for supposed spinal cord tumour, should always be planned with the possibility of finding this lesion. (v) The treatment of this disease is surgical, and the results obtained are very satisfactory if compression has not been too prolonged.

To quote further from this paper, Barr stated:

In the adult the water content of the nucleus is 75 to 90 per cent., which means that it is a semi-fluid mass and, if the annulus is injured, either from trauma or degeneration, so as to produce a break in its continuity or weakening of its wall, the nucleus pulposus will herniate or extrude.

It is interesting to note that, in 10 of the 19 cases, the lesion was either between the fourth and fifth lumbar vertebrae or the fifth lumbar and the sacrum. Every one of these cases had some clinical symptoms and signs which are associated with back strain, i.e.,

sciatic pain, low back pain, stiff back with limitation of straight leg raising, etc. In other words, they were cases which clinically resemble lumbo-sacral or sacro-iliac strain. I know no way of accurately ruling out intervertebral disc lesions in cases of low back strain with sciatica by clinical examination.

It will be observed that these authors clearly brought low back pain, along with sciatica, into the symptomatology of disk disease.

And so the solving of the riddle of sciatica at once created a new problem—how to distinguish between a disk protrusion and low back strain or, as Barr rather provocatively put it, of ruling out a disk lesion.

Steindler (1938) gave it as his opinion that localized peripheral lesions were capable of producing radiation, not only in the posterior, but in the anterior divisions of the spinal nerves, along many different pathways. He classified low back pain into a number of very detailed syndromes, according to the locality of trigger points of pain on pressure. These syndromes he called sacro-spinalis, lumbo-sacral, combined lumbo-sacral and sacro-spinalis strain, combined sacro-lumbar and *tensor fasciae* strain, sacrotuberous and sacro-spinalis in osteoarthritis, and gluteal syndrome, and he attempted to differentiate between these myo-fascial lesions with sciatic radiation and disk protrusions with root irritation by the procaine hydrochloride test. This differentiation test was made by injecting procaine into the trigger point.

Five postulates, he stated, must be met for the result of the test to be regarded as positive: (i) Contact with the needle must aggravate the local pain. (ii) Contact with the needle must elicit or aggravate radiation. (iii) Procaine infiltration must suppress the local tenderness. (iv) Procaine infiltration must suppress the radiation. (v) The positive leg signs must disappear.

Testing 145 patients in this way, Steindler found that 100 gave a positive test result and were therefore regarded as having local myo-fascial lesions with reflex sciatic radiation.

To offset this opinion, Dandy (1941) stated categorically that "intermittent low back pain, plus pain in the back of the leg which is made worse by coughing, is a disc lesion and nothing else".

Crisp (1945) said: "There is a type of painful back which used to be diagnosed as sacro-iliac strain, but in reality is an early disc lesion"; and in the same year Albert Key (1945) commented as follows: "Twenty years ago I tried to classify low back pain—I did so, but was never happy about it and have gradually discarded sacro-iliac strain . . . It is evident that I now believe that, in practically all patients with idiopathic low back pain, the cause of the pain is within the spinal canal and that in over 90 per cent. of the cases there is a lesion of the intervertebral disc." To support his statement, Key claimed that, when operation was performed under local anaesthesia, pressure on the disk or manipulation of an instrument within the disk caused or aggravated the low back pain.

Hyndman (1946), who worked with Steindler on the procaine differentiation test, provided a compromise in 1946, when he suggested that myo-fascial strains did occur and were the cause of low back pain, but he stated that those strains were secondary to instability of the intervertebral joint consequent on disk degeneration.

And there the case rests. Is there such a thing as myo-fascial strain, is disk degeneration *per se* the cause of the back symptoms, or are they due to secondary myo-fascial strain or secondary localized muscle spasm? The answer to these questions is not yet clear.

Pathology.

The exact nature of the pathology of the "disk lesion" is not fully understood. The disk is compounded of a semi-fluid nucleus, consisting of fibrous strands in a matrix of connective tissue cells and cartilage cells, and of a peripheral annulus consisting of lamellated fibrous tissue. The nucleus is not a separate entity, there is a gradual change from annular tissue to nuclear tissue. The nucleus lies somewhat behind the central line of the vertebral body, in

¹ Read at a meeting of the Queensland Branch of the British Medical Association, July 3, 1953.

the so-called axis of movement. It moves forward of this axis on extension of the spine and backward on flexion.

It is generally accepted that degeneration is the underlying pathological process and that stress is the aetiological factor in most cases.

In this connexion it is interesting to consider whether congenital anomalies at the lumbo-sacral junction play a part in disk degeneration, by so altering spinal mechanics that increased stress results.

It is doubtful if *spina bifida* ever plays such a role; yet, if it is large and associated with a ligamentous defect, instability may result.

When the articular facets on one side are in the coronal plane and on the other side in the sagittal plane—the facet syndrome—it is possible that there are abnormal stresses of rotation.

Similarly, stress through abnormal movement may occur in the presence of a transitional vertebra, that is, a partially sacralized fifth lumbar vertebra or a partially lumbarized first piece of the sacrum. In a series of 93 cases of disk protrusions in which operation was performed in the orthopaedic department of the Brisbane General Hospital there were six cases of unilateral sacralization. Two were as follows:

U.M.C., a high school girl, aged sixteen years, had complained of low back pain with sciatic radiation for twelve months, that is, since the age of fifteen years. X-ray examination showed a large unilateral sacralization. Myelography demonstrated a protrusion at both the lumbar fourth-fifth and third-fourth disks. She became symptom-free immediately after operation and returned to full activity six weeks later. She has remained symptom-free for over two years.

D.J., a female patient, aged twenty years, a typist, gave a history almost identical with that of the previous girl. She had a sacralized transverse process on both sides. Her myelogram showed a filling defect at the fourth-fifth lumbar disk. She also has remained symptom-free for two years, with full activity from the sixth post-operative week.

Sciatica associated with spondylolisthesis has been attributed to many different causes. Meyerding (1941) demonstrated that sciatica occurred commonly in the minor degrees of displacement and only rarely in the more marked degrees, a fact which would indicate that nerve irritation is not caused by the displacement itself. It is now generally accepted that the underlying cause in the majority of cases is a disk protrusion, commonly one disk above the level of the slip.

In the orthopaedic department series previously referred to, spondylolisthesis of grades one and two (that is, the minor degrees of slip) was present in 11 cases. If we add to these the six examples of sacralization there is a total of 17 anomalies of two varieties only in 93 patients, or roughly 18%. Though no facts are available to prove it, the impression is gained that this incidence is higher than is found with symptom-free backs. It might also be noted that disk lesions appear to have an unusually high incidence in association with congenital dislocation of the hip and after arthrodesis of the hip.

The *nucleus pulposus* contains between 80% and 90% of water, and it has been suggested that variations in its water balance may play a part in the mechanism of protrusion. Charnley (1952) recently showed that under certain conditions the disk may acquire an abnormal amount of fluid and thereby achieve an abnormally high internal pressure, giving rise to an attack of lumbago or initiating a protrusion.

A patient examined at the Brisbane General Hospital, suffering from pulmonary tuberculosis, had had several atypical attacks of meningitis, which it was thought might have been due to a cerebral tuberculoma. She had been confined to bed for a considerable period of time when she developed an acute right-sided sciatica of sudden onset without back symptoms. Traction applied to the leg for three weeks in no way relieved her pain. At operation an extremely tense unilateral localized bulging of the fourth-fifth lumbar disk was found. The annulus was intact and of normal thickness, and showed no naked-eye signs of degeneration. Some of the annulus was cut away to expose what appeared to be normal nuclear tissue under high

tension. Some of the nucleus was removed. Since the day of operation she has been free from her sciatica.

This patient had had a lumbar puncture performed some time prior to the onset of sciatica, but at operation there did not appear to be any breach in the annulus, and the nucleus was certainly confined within the annulus.

Is it possible that the aetiology in this case was abnormal fluid acquisition as described by Charnley? One is reminded of the similarity between the clinical manifestation of this case and that sometimes seen in women confined to bed during the latter stages of pregnancy.

If degeneration, either primary or secondary to some other factor, is accepted as the underlying pathological change in the majority of cases, two pertinent questions arise. Does the degeneration affect the whole disk or only part of it, and is it progressive?

Armstrong (1952) postulates that it is a progressive lesion and that it does eventually involve the whole disk. There is no doubt that progressive changes do occur, as witness the radiological picture of a completely collapsed disk space.

It is difficult, however, to reconcile a progressive lesion with the common clinical picture of a short-lived attack of lumbago and sciatica which clears up, never to return again; or with a manifest disk lesion which has been operated upon with removal of part of the disk, and this localized removal is followed by rapid and permanent disappearance of symptoms and signs, leaving no radiological narrowing of the disk space thereafter.

It would seem likely that degenerative changes may occur in part of a disk, either in the annulus or in the nucleus, or in both.

To sum up the pathology, it can be said that it is a degenerative process which may be localized or generalized, and which has a propensity to spontaneous healing given the right circumstances. Trauma, in the nature of either an acute strain or persistent stress, plays a part in the production or aggravation of the disease. The primary stages of degeneration may be accompanied by pain in the back due to direct irritation of intraspinal structures or to localized muscle spasm or secondary strain of extraspinal myo-fascial tissues consequent on instability of the diseased intervertebral joint. Intraspinal protrusion is a late stage or a complication of disk regeneration, and when it occurs an attack of lumbago or sciatica may result.

Mechanism of Symptom Production.

Lumbago or a sudden spontaneous attack of crippling low back pain probably occurs when the disk tissue is in the process of protruding. The protruding tissue either is jammed between the posterior margins of the adjacent vertebral bodies or becomes tensely swollen by alteration of its fluid content. Sudden relief of lumbago either spontaneously or as a result of manipulation is brought about by reducing the disk tissue to its original intravertebral position, or else by completing the protrusion into the spinal canal. In the latter event, sciatica will probably follow.

Protrusion most commonly occurs to one side of the posterior longitudinal ligament. It may, however, be bilateral, and is occasionally central. If it is central, *cauda equina* symptoms may develop; if it is lateral, signs of root irritation alone are present; if neither the *cauda equina* nor an intraspinal nerve is involved, a protrusion may be silent as far as sciatica is concerned.

It was originally suggested that sciatica was due to compression of the nerve root between the disk protrusion anteriorly and the *ligamentum flavum* posteriorly. For many reasons this theory is untenable in most cases. It may be true when the protrusion is situated so far laterally that it virtually lies in the intervertebral foramen. The nerve is then compressed between the protrusion and the free margin of the *ligamentum flavum*, which forms the posterior boundary of the foramen.

O'Connell (1942) suggested that symptoms were due to stretching of the intraspinal nerve. Observation at operation shows this nerve to be sometimes so tightly stretched

over a protrusion that considerable force is necessary to displace it. And if a straight leg raising test is carried out during operation, it is noticed that in the early stages of the test little or no movement of the nerve occurs, but, as the leg nears a right angle, the intraspinal nerve rapidly becomes very taut. If lying on the summit of the protrusion, it may slip from it; if lying at its base, it may ride up onto the summit and defy retraction.

These observations make readily understandable phenomena such as the increase in leg radiation with sciatic stretch and the dramatic relief of sciatica by movement or manipulation.

Onset of Symptoms.

The mode of onset of symptoms varies from case to case, but a number of characteristic patterns do occur.

There is, for example, the labourer who, during a particularly heavy lift or an unusually arduous day, feels something go in his back. He continues work and soon afterwards develops pain in his back, mild at first but rapidly becoming worse as the day goes on. Next morning he is unable to get out of his bed. Acute pain persists for about two weeks before it begins to subside.

There is the housewife who, when stooping down to pick up a safety-pin, is smitten with lumbago.

There is the artisan who, for no reason at all, suffers from recurring attacks of low back pain—not severe in the first instance, but by degrees becoming more incapacitating. Radiation to the buttock develops, then to the thigh, and later down the whole leg with numbness and “pins and needles”.

And there are those who complain only of recurrent attacks of pain in the calf, or thigh, or of classical sciatica.

In the symptom patterns exemplified by the labourer and the housewife, sciatica may develop at any stage of the first attack or during any subsequent attack. It is usually sudden in its onset.

A history of a traumatic incident may be elicited, but is not essential to the diagnosis. Disk lesions only rarely follow major trauma. In a personal series of 61 cases of disk protrusion verified at operation, sciatica succeeded low back pain by more than a few days in 26 cases; it occurred within a day or so of the onset of the back pain in 25 cases; and it was the sole complaint in 10 cases. A history of trauma was given by 30 out of the 61 patients.

Physical Signs.

Physical signs are as variable as the symptoms, but often as characteristic. Their presence in many instances depends on the severity of the pain at the moment of examination.

Postural deformities are common, and include forward stooping, flat lumbar spine and scoliosis. Sciatic scoliosis often appears as a tilt—the patient stands with his trunk at an angle to his pelvis. The tilt may be toward or away from the symptomatic side, depending on the relationship between the protrusion and the intraspinal nerve. If the patient is able to stand erect, it is frequently observed that forward bending is associated with deviation of the trunk to one side.

Spasm of the back muscles with the patient in either the erect or the prone position is variable; it is always present when pain is acute.

Localized tenderness is not always present. It may be elicited over a spinous process or an interspinous ligament, or immediately lateral to the mid-line. Its level bears no definite relation to the level of the pathological disk. It is frequently elicited in the vicinity of the posterior superior iliac spine and iliac crest.

The jugular compression test introduced by Aird and Naffziger (1940) is not diagnostic of an intraspinal lesion, but may be helpful. In its simplest form, sustained jugular compression initiates or aggravates the pain or paraesthesia. Repetition of the test in three positions is a modification worth trying; these positions are: standing erect, standing with the spine flexed, and standing with the spine extended. A positive result from the test is sometimes obtained with

the patient in only one of these positions. In some instances jugular compression is accompanied by diminution of the sciatica. In one case it ceased dramatically, and the patient remained free of pain thereafter. Presumably, in this case movement of the intraspinal nerve, resulting from the raised intrathecal tension, caused it to be displaced from the summit of a protrusion. A negative result from the test is, of course, without significance. In a personal series of cases every patient operated upon in whom the Naffziger test result was positive had a disk protrusion.

The straight leg raising test, with its many modifications, is probably the most useful single clinical test. A positive result from the test is constituted by the production or intensification of pain or paraesthesia on flexing the hip with the knee fully extended.

In O'Connell's modification, firstly, the sound limb with extended knee is flexed at the hip; the angle at which pain is produced is noted. Secondly, the affected limb is similarly raised, and the angle at which pain occurs is noted—usually considerably less than on the sound side. Thirdly, both legs are raised together; the angle of flexion permitted is now considerably greater than with the affected limb alone. Fourthly, with both legs raised to an angle just short of the painful angle, the sound limb is lowered, when a considerable degree of sciatic pain recurs.

In the modification of Burns and Young (1945) the affected limb is raised until pain occurs, and the knee is then flexed. If pain is relieved, the lesion is intraspinal; if it is not, the lesion is extraspinal. With the leg still raised the cervical part of the spine is flexed; if pain recurs, the knee is again flexed. If the pain is relieved, the lesion is intraspinal; if it is not, the lesion is myofascial in origin.

Level of Lesion.

Sciatic radiation is not always felt along the whole cutaneous distribution of the nerve root involved. The more proximal distribution of buttock and thigh is the most common site. Involvement of the calf occurs often in conjunction with the thigh, but may be the sole area of involvement. The foot is the site least often involved.

With what degree of certainty can the level of a disk lesion be determined from the distribution of the leg radiation? Where the whole of a dermatome or a characteristic part of it is well defined, the actual root involved can be determined and from this the offending disk calculated, except in the case of a foraminal protrusion, where the root involved is one higher than with a more medially placed protrusion of the same disk. In a number of cases in which the leg radiation is ill defined or complex, the involved root cannot be determined with certainty. It is for this reason that the operative approach in disk lesions must be carefully planned.

Plain X-Ray Examination and Myelography.

What is the value of a plain X-ray examination and what is the place of myelography?

A plain X-ray examination may provide definite evidence of pathological change in a disc, but is uninformative concerning the cause of the present symptoms or the level of the symptom-producing lesion. The lumbosacral disk is wedge-shaped and usually the widest disk, but considerable normal variation occurs, making slight degrees of radiological change difficult to interpret. Well-defined degrees of narrowing or collapse with sclerotic margins, posterior or anterior osteophytes or apparent displacement of the vertebrae provide definite evidence of disk degeneration. Such evidence, however, does not necessarily mean that that particular disk is the cause of all or any of the presenting symptoms and signs. It may be that the lumbosacral disk with definite radiological changes is productive of low back pain, while a protrusion of the disk one space higher with no radiological changes is the cause of the sciatica. In such a case operative treatment of the disk protrusion will cure the sciatica but not the back pain.

In the early days of disk surgery the operating surgeon obtained great comfort from a well-defined myelographic defect. But the use of lipiodol as a medium soon began

to be looked upon with disfavour, owing to meningeal reactions, and so came the use of air and oxygen. These media may, however, be dismissed as inadequate.

As the confidence of the surgeon rose in his ability to diagnose a protrusion and even to localize it, he became more definite that myelography was not only useless, but unnecessary. Now that we have settled down into the more critical stage, its use is debated. Criticism of the myelogram is based mainly on the fact that, as the majority of protrusions occur at the last two disk spaces, both these disks should be exposed at operation, myelographic differentiation between them thus being rendered unnecessary. Other reasons stated in evidence against it are that it is not sufficiently accurate to justify its use and that the risk of immediate and remote iodine arachnoiditis condemns it. Lipiodol has been superseded by "Pantopaque" and "Ethiodan", which are less irritant and much more rapidly absorbed than is lipiodol. In addition, by a careful technique, the oil can be removed at the time of the examination in most cases, the objectionable meningismus being thus reduced to a minimum. In 110 myelographic examinations personally carried out with "Pantopaque" or "Ethiodan" as the medium, no severe immediate reaction has occurred and, as far as is known, no delayed arachnoid irritation has developed.

With regard to its efficiency, in our experience it has been accurate in 85% to 90% of cases in which operation has been performed.

To offset this inaccuracy of 10% to 15% a "positive" myelogram has the advantage of determining the exact level of the protrusion and, what is more important, the presence of unsuspected multiple lesions. Multiple protrusions are by no means uncommon, and some of them are silent (perhaps only temporarily) as far as leg radiation is concerned. A right-sided five-one protrusion and a left-sided four-five protrusion would almost certainly defeat the surgeon who employed any exposure other than a bilateral one of both these disks.

Indications for oil myelography are as follows: (i) In any case in which an intraspinal lesion other than a disk protrusion is suspected. (ii) When a disk protrusion is diagnosed, but the clinical signs and symptoms are not clear cut. (iii) When a protrusion above the fourth-fifth disk is suspected. (iv) If operation is contemplated by an interlaminar or hemilaminar approach. (v) When the clinical picture could be produced by a disk lesion but neurosis is the considered diagnosis. A number of "neurotics" have been cured of their pain by the removal of a myelographically demonstrated protrusion.

Treatment.

If a disk lesion is allowed to run its course without treatment there will be some patients who will become symptom-free and there will be others who will become permanently partially incapacitated by backache or sciatica.

Unfortunately, no evidence has yet been found by which the course of the disease can be forecast in the early stages of the lesion, and therefore thorough treatment cannot be ignored. It is not sufficient to argue that, because degenerated disk tissue, protruded or *in situ*, is ultimately absorbed by the invasion of granulation tissue containing phagocytic elements, the disease is self-limiting. Permanent incapacity is caused, not by the degeneration *per se*, but by changes occurring in other structures, as a result of altered intervertebral joint mechanics consequent on prolonged or extensive degeneration of the disk.

As stress appears to play a large part in the production and maintenance or aggravation of the disease, protection from stress is the sheet-anchor of conservative treatment.

In the acute case adequate bed rest is imperative, and since this entails absolute rest in the supine position on a fracture bed, it cannot, as a rule, be carried out effectively at home. To ensure more adequate rest of the spine, a plaster bed or spica has been recommended; these measures, however, seem rather drastic and are probably unnecessary. Another radical form of conservatism is weight traction to the limb or limbs. Some cases settle down very quickly under this régime, but so they may have done if bed rest

alone had been employed. It is rare for traction to succeed where adequate bed rest has failed.

Epidural injection of hypertonic saline or local anesthetic has little to recommend it in the acute case. Relief of pain, when obtained, is often only temporary. Epidural injection is undoubtedly effective in some subacute or long-standing cases, when perhaps persistent oedema is present or when light adhesions may be broken down or the nerve root stretched by passively raising the straight leg immediately after the injection.

If conservative treatment is going to be followed through to its rational conclusion, that is, until the disk has degenerated, absorbed and scarred, it would be something like this: four to six weeks of rest in bed, two to three months in a body plaster or brace with restricted activity, and three to six months in a reinforced corset, light work being allowed during this period; and, following this, a period of rehabilitation to full activity.

Such a time-consuming procedure is beyond the economic and social means of many patients.

Few statistical reports are available concerning the end-result of purely conservative treatment. Colonna (1949) presented a comparison between the results obtained in a series of operative and non-operative cases, followed for an average period of two and a half years. In the non-operative group he found that 29% of the patients were pain-free and 71% had residual pain. In the operative group, 60% were pain-free and 40% had residual pain. Of the patients who still had pain, 32% in the non-operative group were dissatisfied. In the operative group only 13% were dissatisfied.

Among the many reports of operative results there are a few striking variations, but, in the main, they are substantially uniform.

Barr (1951) in 100 operations obtained relief of sciatica in 98% of cases, of low back pain in 64%.

Wiberg (1951) in 624 operations obtained 85% of good results and 15% of poor results.

Pais (1951) in 906 operations obtained relief in 83% of cases, improvement in 12% and no improvement in 5%.

Eyre-Brook (1952) in 99 cases found residual sciatica in 5% and residual back pain in 15%.

In a personal series of 61 consecutive patients operated on and followed for an average period of two years, 85% were free from pain, 15% had residual pain which caused some incapacity. The average time off work after operation in all cases in this series was 3.5 months, and in the pain-free group 2.6 months.

If a critical analysis of operative results is made, it is found that a definite cause for failure to obtain a good result can be ascertained in many cases. Amongst such causes are inadequate removal of the degenerated disk material, failure to locate the symptom-producing lesion (either single or multiple), owing to inadequate operative exposure, and failure to treat by supplementary methods the cause of low back pain due to a lesion other than the disk degeneration itself. When errors of diagnosis and technique are eliminated the results of operative treatment may be regarded as very satisfactory and, on the evidence available at the moment, more favourable than the results of conservative treatment.

There is, however, a type of disk lesion which responds rapidly and satisfactorily to conservatism and which, therefore, should not be operated upon. But, as no means of determining such a lesion in the early stage is available, a test of conservatism should be applied in most cases.

For this test absolute uninterrupted rest in bed must be insisted upon. If within two or perhaps three weeks the symptoms have not subsided, operation should be carried out forthwith. If the symptoms do subside within this test period, bed rest should be continued for a further week or so. Then comes a trial of ambulation with the spine supported by a reinforced corset or light brace. This trial is continued for a period of two months, followed by a period of rehabilitation. If at any time during this trial pain returns, operation is indicated.

Operation without a trial of conservatism should be performed in the very acute case, when there is a large myelographic defect or when attacks have been recurring at short intervals.

Operative Approach.

A wide difference of opinion exists concerning the operative approach to a disk protrusion. Some surgeons use an interlaminar approach, some consider hemilaminectomy is the minimum necessity, and some insist that the whole of at least one lamina must be removed.

The interlaminar approach and the removal of half of one lamina only are inadequate to meet all circumstances. Hemilaminectomy of both the fourth and fifth lumbar vertebrae is an excellent approach, but has two shortcomings. It does not make allowance for a coexisting protrusion on the contralateral side, and it is inadequate to deal with an extensively degenerated disk. The most rational approach is to remove the whole of the fifth lamina and as much of the fourth as is necessary to visualize both sides of the lower two disks.

With regard to bone-grafting at the time of operation, it may be said that in uncomplicated disk lesions the results with grafting are no better than simple removal of the degenerated disk material. A graft should be used only when it is indicated by some lesion other than the disk protrusion itself—for example, instability, degenerative changes in the apophyseal joints and persistent low back pain following a disk operation, and perhaps in the case of a recurrent protrusion.

In view of the possibility of late sequelae, such as collapse of the disk space with instability and arthritis, it is tempting at operation to fill in the hollowed-out disk with bone in the hope of obtaining permanent stability. This procedure is being investigated, and it may be that in the future it will be the operation of choice, or it may be that in the future operation at all will prove to be nothing more than an extravagance of surgical virtuosity.

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Reports of Cases.

ECTOPIC INTERSTITIAL PREGNANCY FOLLOWED BY EXPLOSIVE RUPTURE OF THE UTERUS: REPORT OF A CASE AND BRIEF REVIEW OF THE LITERATURE.

By JAN J. SAAVE, M.D.,

Rabaul, Territory of Papua and New Guinea.

THIS communication presents a case which appears to be worth recording because of its unusual findings.

Clinical Record.

On April 18, 1951, a half-caste woman (half Chinese and half New Guinea native) was admitted to the Asiatic Hospital at Rabaul with vague abdominal pain, diarrhoea and pain in the left side of the chest and the left shoulder. She had begun to menstruate at the age of fourteen years. The menstruation was of three to five days' duration, and the bleeding was of moderate degree, the interval being twenty-one to twenty-eight days. She had three living children; one died soon after birth. She had had one miscarriage. Appendicectomy was performed in 1949, and the post-operative course was apparently uneventful. She had conceived soon afterwards. Approximately eight weeks later she noticed increasing abdominal pain and blood loss *per vaginam*. She was admitted to the Catholic Mission Hospital at Vunapope with a diagnosis of ectopic pregnancy. Laparotomy revealed intraperitoneal hæmorrhage and an indurated sausage-like left Fallopian tube. This was transfixed and, as far as it could be ascertained from notes available, simply "amputated" at the uterine end. The right Fallopian tube and ovary were apparently normal. The patient noticed that since then the menstrual blood losses had been much heavier and associated with severe abdominal pain. Her last menstrual period had occurred about Christmas-time, 1950. Sudden urgency of micturition had developed in the beginning of April, 1951, and the micturition had not improved since. For a few days prior to her admission to hospital she had suffered from diarrhoea and increasing abdominal pain.

On examination, the patient was in very good general condition. She was aged approximately thirty-seven years. Her temperature was 37.5° C. (99° F.). The pulse rate was 90 per minute, the beats being regular, equal and of fair volume. The respiration rate was 25 per minute. There was a friction rub over the base of the left lung. The blood pressure was 120 millimetres of mercury, systolic, and 80 millimetres, diastolic. The abdomen was moderately distended and tender on palpation and percussion. Peristalsis appeared to be normal. External examination revealed a round mass, three fingers' breadth (50 millimetres) below the umbilicus, extending into the left iliac fossa. However, these findings were not very conclusive, as the patient had well-developed fat tissue. The lower abdominal reflexes were absent. There was apparent rigidity of the abdominal wall over the left iliac fossa. No ascites was present. The mucous membranes were pink. On rectal examination a mobile, tender mass was found in the pouch of Douglas.

On April 19 there was no change in the patient's condition.

On April 20 she had a sudden, sharp, excruciating pain in the left iliac fossa. She was covered by a cold sweat and became very restless. Her breathing was predominantly costal, very rapid and shallow. The abdomen was much distended and tense. Vaginal examination revealed a soft cervix and tender parametrium, but no hæmorrhagic discharge. The vulva presented no changes. The temperature was 38.4° C. (101° F.), the pulse rate was 140 per minute; the beat was regular and of poor volume.

In the differential diagnosis, torsion of an ovarian cyst and a ruptured ectopic gestation were considered. The diagnosis of acute concealed abdominal hæmorrhage was

made, and the patient was operated upon, under spinal anaesthesia, at 3.30 p.m.

Laparotomy was performed through the mid-line incision. The old longitudinal scar was excised and the abdomen was opened. The pelvis was filled with a huge blood clot covering the entire operating field. The freeing of pelvic organs was rendered difficult owing to numerous dense adhesions between the anterior abdominal wall, the intestines and the uterus. The adhesions were tied and cut; but as soon as the blood clot was partly removed severe haemorrhage took place, which was controlled. A foetus was found lying in the pouch of Douglas. Palpation along the umbilical cord towards the uterus revealed the placenta, still attached to the long cleavage of the uterine wall. It began at the fundus and ended approximately at the cervix, involving the left uterine vessels. These were securely tied and the foetus was removed. The right Fallopian tube and ovary appeared to be intact. Examination of the uterus revealed an explosive rupture of its entire length, which was considered beyond successful surgical repair. Thus the subtotal hysterectomy (supracervical amputation) was performed. A blood transfusion of 300 cubic centimetres was given, followed by one litre of 5% dextrose in normal saline. The post-operative diagnosis was made of recurrent ectopic interstitial pregnancy in the remnants of the left Fallopian tube, complicated by the rupture of the uterus.

The post-operative course was uneventful, apart from the development of a small haematoma of the mid-line incision.

On examination of the specimen removed, there were numerous dense adhesions covering the posterior surface and the fundus of the uterus. There was a large tear in the uterine wall, extending from the right lateral third of the fundus to the entrance of the left uterine vessels. This opening led to a cavity occupying the area of the left uterine angle. The cavity was 64 millimetres (two and a half inches) in diameter, and approximately 35 millimetres (approximately one and a half inches) deep. It was separated from the intact uterine cavity by a muscle layer three millimetres (approximately one-eighth of an inch) in thickness. The uterine cavity was 40 millimetres (approximately one and three-quarter inches) deep, and lined with decidua-like endometrium.

The opening of the right Fallopian tube presented no abnormalities. The opening on the left (possibly that of the left Fallopian tube) led to the burst cavity; otherwise there were no gross pathological lesions or congenital abnormalities.

The placenta (63 millimetres in diameter) was found attached to the lateral wall of the cavity in the vicinity of the uterine end of the left Fallopian tube. The placenta was well developed and showed well-formed chorionic villi, some of which had a haemorrhagic appearance. The umbilical cord was 110 millimetres (approximately four and a half inches) long.

The female foetus was 155 millimetres (approximately six and a quarter inches) in length. It had a well-developed nose, ear lobes, ribs, fingers and toes. No congenital deformities were found. The skiagram of the foetus showed well-defined shadows of the foetal spine, the ribs and the upper and lower limb bones. It was considered that the foetus was of approximately twenty weeks' gestation.

Comment.

The clinical picture of this case included the following relevant facts: (i) a history of a previous ectopic pregnancy; (ii) urinary urgency; (iii) diarrhoea; (iv) dull abdominal pain, referred to the left shoulder; (v) sharp, excruciating pain in the left iliac fossa (on the day when the collapse occurred); (vi) a soft, mobile mass in the pouch of Douglas, tender on palpation; (vii) abdominal distension; (viii) tenderness of the parametrium on both sides; (ix) sudden, severe collapse. However, there was no vaginal bleeding at any time.

Cross *et alii* (1951) recommend the "Pitocin" test in identification of an extrauterine mass as a further diagnostic help, especially if an abdominal pregnancy is suspected. Bookrajan and Luther (1951) stress that the commonest symptoms in their series were abdominal tender-

ness and vaginal haemorrhage; 6.4% of their patients had had a previous ectopic pregnancy. Dörr (1949) and Schwenzer (1949) advocate extreme care in evaluating the significance of the frequent symptoms found, and state that the correct diagnosis can be most difficult. Schumann (1951) points out the great importance of the history of the patient, and adds that the subjective signs of pregnancy are usually less pronounced in ectopic gestation.

In the differential diagnosis, axial torsion of the pedicle of an ovarian cyst, acute abdominal haemorrhage of unknown origin and combined intrauterine and extrauterine pregnancy (Derby and Miller, 1951) should be considered.

There is another, though apparently rare, syndrome of importance complicating a pregnancy—bleeding from a torn utero-ovarian vein (Hodgkinson, 1952). It has a high maternal mortality rate (49.3%).

Parker (1951) found that in 91% of cases of rupture of the gravid uterus the patients were *multiparae*; 95% of all ruptures were in the lower segment. The most likely mechanism of ectopic pregnancy in the reported case is that the fertilized ovum becomes implanted during its migration in the interstitial remnants of the left Fallopian tube. It dissects further muscle layers of the left angle of the uterus and becomes *graviditas in substantia uteri*. After five months of undisturbed growth it ruptures into the peritoneal cavity.

It is interesting to note that there were only two ectopic pregnancies amongst 1471 admissions and 1317 deliveries at the maternity section of the Rabaul Native Hospital from March 1, 1950, to June 1, 1953. One of these was a rupture of the left Fallopian tube, and the other was a tubal miscarriage with retrouterine haematocoele. These two cases are only 0.10% of all admissions to the hospital. Scragg (1951) reported two cases of ectopic pregnancy from Kavieng Native Hospital.

This condition seems to be less frequent in New Guinea natives than in Europeans.

The incidence of ectopic gestation as quoted by Schumann (1921) was in the past 1 in 303 pregnancies. Stander (1945) found that at the New York Lying-In Hospital in the period from 1931 till 1945 there was one ectopic pregnancy for every 268 pregnancies. Anderson's (1951) analysis showed one ectopic gestation in 167 deliveries. Krohn *et alii* (1952) recently published a study concerned with a new aetiological factor—the antibiotics and especially penicillin. They believe that penicillin had a definite influence on tubal gestation, and state that the reported incidence of ectopic pregnancy in the United States of America has almost doubled since the introduction of antibiotics.

Penicillin and the sulphonamide drugs are widely used in this country, as they are easily obtained. The influence of such antibiotic therapy will no doubt be seen in a few years' time. On the other hand, there is ample clinical evidence available that in native women displacement of pelvic organs and tubal and pelvic inflammation are a common occurrence. Necropsy experience provides another proof of previous specific (gonorrhoeal) and non-specific tubal and pelvic inflammatory processes. I have performed 20 necropsies on subjects in the age group fifteen to forty-five years. Adhesions, strictures, increased tortuosity and displacement of the Fallopian tubes and ovaries were found in nine cases—that is, in 40.5%.

Summary.

A case of recurrent interstitial ectopic pregnancy complicated by rupture of the uterus and torsion of the left uterine vessels is reported.

The clinical, operative and pathological findings are briefly discussed.

The condition reported seems to be less frequent in New Guinea natives (Melanesians) than in western races.

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MOTOR EFFECTS OF HERPES ZOSTER.

By B. H. PETERSON,
Sydney.

HERPES ZOSTER is an acute infection involving primarily the first sensory neuron and the corresponding area of skin, and is probably caused by the "zoster-varicella" virus (Brain, 1951). Localized meningeal inflammation also occurs, hence the excess of mononuclear cells and raised protein content usually found in the cerebro-spinal fluid. The adjacent posterior horn of the grey matter of the spinal cord is often involved, and there is evidence that the infection sometimes spreads to the anterior horn, as in a case reported by Lhermitte, in which death of the patient some weeks after an attack of herpes zoster enabled inflammatory changes in the anterior horn cells to be observed, though no motor signs had been found during life. This case was quoted in "Current Comment" in this journal in 1950. The same article reviews an account of the motor manifestations of herpes zoster by Halpern and Covner, who report a case of their own in which severe herpes zoster of the third and fourth cervical posterior roots was accompanied by phrenic paralysis on the same side. Whitty and Cook (1949) report some interesting cases. In one, herpes zoster of the third and fourth sacral segments was accompanied by urinary retention with overflow for several days; in another, herpes zoster of the right trigeminal nerve was accompanied by bilateral ptosis, lateral nystagmus, skew deviation, and uncrossed diplopia present in all directions, presumably due to mid-brain encephalitis, and unsteady gait, difficulty in starting micturition, and an extensor plantar response on the right side, due to pyramidal tract involvement. Brain (1951) makes the following statement:

Muscular wasting of segmental distribution is a rare accompaniment of zoster and is probably due to an extension of the infection from the posterior to the anterior horns of grey matter in the spinal cord. Thus I have seen atrophic paralysis of the muscles supplied by the fifth cervical segment and also paralysis of the abdominal wall, the latter leading to pseudo-hernia. These palsies are usually permanent.

He goes on to state that extension of the infection to the white matter of the spinal cord also occurs, though rarely. This may involve the pyramidal tract, causing spastic paresis of the lower limb on the same side as the eruption. I am reporting the following case because it seems to be

an example of the rare pyramidal tract involvement, and also because it has the interesting accompaniment of facial palsy of lower motor neuron type.

Clinical Record.

F.F., an unmarried female patient, aged eighty years, had been admitted to the Mental Hospital, Gladesville, on May 2, 1950, as a certified patient, suffering from senile dementia. Physically she was very well preserved, and her blood pressure was 130 millimetres of mercury, systolic, and 65 millimetres, diastolic. On the morning of February 3, 1953, she said that she did not feel well and complained of pain in the left side of the neck. That afternoon she was examined and found to have a typical herpetic eruption in the distribution of the left second and third cervical nerves, and slight left facial paresis. The temperature and pulse rate were normal, and remained so during the rest of her illness. The next day there was complete left facial paralysis of lower motor neuron type. There were no herpetic vesicles in the auricle or throat, or on the tongue. On February 5 she had difficulty in walking and dragged her left lower limb. She was found to have mild spastic paresis of this limb, with exaggerated tendon reflexes and an extensor plantar response. No abnormal neurological signs were found in the right lower limb or in the upper limbs. Bladder and bowel function was undisturbed, and there was no sensory loss, no deafness, and no clinical evidence of paralysis of the diaphragm. The ophthalmologist reported that examination of the fundi revealed extreme retinal and choroidal arteriosclerosis, with large patches of retinal degeneration and scattered small retinal hemorrhages. On February 10, lumbar puncture was performed. The cerebro-spinal fluid appeared clear and the pressure was not increased. It contained eight lymphocytes per cubic millimetre, and 30 milligrammes of protein per 100 cubic centimetres. The globulin content was not increased, and the colloidal gold reaction was normal. No loss of taste could be demonstrated on the left side of the tongue, though the patient was not a very reliable witness. On February 14, the left lower limb was stronger and less spastic, but the reflexes remained unaltered. On February 20, she could walk fairly well, though she dragged the left leg and the reflexes were still abnormal. The vesicles had been replaced by small scars. On March 1, the gait and tendon reflexes were normal, but the left plantar reflex was equivocal. By May 20 this too had returned to normal, but the left facial palsy remained complete. No change in her usual mental state was noted during this illness.

Comment.

The possibility that the cervical herpes was associated with a coincidental cerebral vascular accident causing the paresis must be considered, especially in view of her age. However, the sequence of events in the history, and the fact that the facial paralysis was lower motor neuron in type favour the hypothesis that all her symptoms and signs were due to the herpes virus. It is suggested that the temporary upper motor neuron paresis of the left lower limb was caused by extension of the herpetic inflammatory process to involve the left lateral cortico-spinal tract at the level of the second and third cervical segments of the spinal cord. It will be recalled that the posterior horn is often involved in herpes zoster, and that many of the fibres of the lateral cortico-spinal tract are concentrated in an area just antero-lateral to the posterior horn. There was no clinical evidence that the infection also spread to the anterior horn in this case.

It is more difficult to explain the left lower motor neuron facial paralysis, which seems to be permanent. The "Current Comment" in this journal (1950) states that facial paralysis often occurs in geniculate herpes, but is rare in cervical herpes. In this case, the absence of vesicles in the auricle or throat or on the tongue suggests that neither the geniculate ganglion nor the chorda tympani (Findlay, 1949) was involved. The lesion must have involved either the facial nucleus, or the nerve trunk as it travels in the lower part of the facial canal, in the stylo-mastoid foramen or in the parotid gland. A nuclear

lesion seems unlikely. How then could the lower part of the trunk of the facial nerve become involved in the herpetic inflammatory process? I suggest two possibilities: (i) The area of skin overlying the exit of the facial nerve from the stylo-mastoid foramen is supplied by the second and third cervical nerves. *Herpes zoster* of these nerves and the corresponding area of skin may result in a spread of inflammatory oedema to involve deeper structures, thus causing compression of the facial nerve trunk in the stylo-mastoid foramen and the lower part of the facial canal. If this compression lasted long enough, the resulting facial paralysis might be permanent. (ii) The involvement may have resulted from direct spread of infection via the lesser occipital nerve, which sends a communicating branch to the posterior auricular branch of the facial nerve, or via the great auricular nerve whose branches communicate with those of the facial nerve in the parotid gland. Only further investigation can decide whether either of these theories is correct.

Summary.

1. A case of *herpes zoster* of the left second and third cervical nerves, with temporary upper motor neuron paresis of the left lower limb and permanent lower motor neuron paralysis of the left facial nerve, is described.

2. An attempt is made to explain the pathology underlying this syndrome.

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LATE COMPLICATIONS AFTER PERINEAL EXCISION OF THE RECTUM.

By JAMES MACRAE YEATES, F.R.C.S.,
 Sydney.

Historical Note.

P. LOCKHART-MUMMERY first published in 1920 an account of the operation which has since borne his name. His avowed object was to reduce the mortality due to shock and sepsis attending the type of operations previously performed for carcinoma of the rectum. The following three excerpts from his article are of particular interest:

The technique of the operation described here, makes it possible to perform an absolutely aseptic operation from start to finish, and so abolish the chief cause of mortality—namely, sepsis in some form or another. . . .

The first operation consists of a colotomy, performed through the left rectus, fairly high up; . . . The colotomy is opened two days later. . . .

As regards the blind portion of bowel below the colotomy opening, I have never seen any trouble result from it beyond a sinus which in a few cases persisted for some months. I have two cases in which this operation was performed over seven years ago, and neither of these patients suffers any inconvenience from the blind portion of the bowel.

Clinical Record.

Mrs. B., aged seventy-two years, first consulted me on April 19, 1948. She said that in October, 1947, she had undergone an operation for cancer of the rectum. The cancer was evidently low down in the rectum, as her doctor had been able to palpate it on rectal examination. After

the operation she had been left with a colostomy in the left inguinal region, but faeces continued to discharge from the wound in the perineal region. Because of this state of affairs a second operation was performed in January, 1948. After this operation two openings of the bowel were present in the left side of her abdomen. From the upper new opening all the faeces were henceforth discharged. From the old lower opening a small amount of mucus was discharged. No faeces now came via the perineum, and the wound in this region healed for the first time.

All went well until April, 1948, when thick pus and some blood began to appear in the urine. Frequency of micturition and dysuria were very distressing. After several weeks of severe pain and fever a copious purulent discharge appeared from the perineal wound, with immediate relief of the bladder symptoms. On examination of the patient on April 19, 1948, she was seen to be of remarkably good physique for a woman of her age. Two adjoining colostomy openings were evident in the left iliac fossa. A catheter could be passed 10 centimetres down the lower of the two openings and appeared to travel towards the pelvis. A discharging sinus was present in the centre of the perineal wound, and a catheter passed upwards five centimetres. The patient was informed that her troubles were arising from the terminal segment of the distal colon and that the only certain cure was removal of the offending part of the bowel. Because of her age and of the many months already spent in hospital, such an operation was advised but not urged. Her local doctor was against more surgical intervention and advised two more consultations. Both consultants advised against operation, one of them informing the relatives that a recurrence of carcinoma was present.

For the next few years the patient lived in comparative comfort, but was troubled by recurrent bouts of pelvic pain relieved by discharge of pus from the perineum.

She next consulted me in July, 1952, with the history that a recent attack commencing several weeks previously had been much more severe than any before. Her local doctor reported that at times her temperature had risen to 104° F. despite large doses of penicillin and streptomycin. At this stage the patient was more than willing to have another operation. The following day the abscess discharged, with the usual profound relief of symptoms. She was admitted to hospital on July 22, 1952. During the next week she was given full doses of "Thalazole" by mouth and the various openings were irrigated daily.

Operation was performed on August 1, 1952. The bladder was emptied by a catheter which was left *in situ*. The table was moved into the Trendelenburg position. An oblique 10-centimetre incision was made in the left side of the abdomen immediately below the distal colostomy opening. There was no evidence of carcinoma anywhere. The first step in the operation was the isolation of the left ureter, which was held out of the way with a piece of tape. The distal colostomy opening was then dissected out from the abdominal wall, and was found, as expected, to connect with a large loop of pelvic colon. Dissection of this bowel was surprisingly easy, considering the history of nearly five years' recurrent suppuration. Even in the region of the bladder the adhesions were by no means dense. The end of the bowel was finally cut away from fibrous tissue in the bottom of the pelvis. The gap in the abdominal wall left after removal of the distal colostomy was then carefully repaired and the incision was closed. The duration of the procedure was ninety minutes, and the patient's condition remained excellent throughout. The loss of blood was insignificant.

The catheter was removed on the third day and the bowels worked (via the colostomy) on the sixth day. On the tenth day a small collection of blood was passed via the perineal sinus. The patient was discharged from hospital on the eighteenth day.

She had previously been used to managing her colostomy by the irrigation method and had found this time-consuming, irritating and not very dependable. She was recommended to abandon this method and to follow the advice of Dukes (1947). When she was interviewed in November, 1952, she was free from all troubles, but not quite happy about the new colostomy management.

In March, 1953, she was delighted to report that she now had confidence in the colostomy, which was working once a day (and rarely more often), and that she was out of her home nearly every day.

The part of the colon removed at operation was sent for pathological examination, and the following report was received:

A segment of colon 34.0 centimetres long was received together with the attached mesentery. Thin fibrous bands stretched between the proximal and distal ends across the concavity of the bowel. A semi-circular piece of skin was attached to one end. The lumen of the bowel was reduced in size. No evidence of ulceration or new growth was seen.

The report on the microscopic examination was as follows:

No evidence of malignancy or active inflammation has been found in the colon or in the six regional lymph nodes examined. The submucous coat of the bowel is fibrosed and there are a few small collections of foreign body giant cells around suture material in the adipose tissue adjacent to the colon.

There are occasional peri-vascular collections of lymphocytes and plasma cells.

Comment.

In this case precise details of treatment performed elsewhere were not obtained, but the following points are reasonably certain: (i) That the original lesion was a carcinoma of the rectum low enough to be felt with ease on digital examination. (ii) That the original operation was a perineal excision of the rectum with a loop colostomy. (iii) That this operation was adequate as regards removal of the carcinoma, but technically at fault in that some faeces found their way into the distal stump. (iv) That at the second operation the loop was completely divided and the two ends were separately inserted into the abdominal wall. (v) That although this procedure apparently diverted all the faeces through the artificial anus, for some reason recurrent infection and abscess formation lingered in the now defunctioned distal stump. (vi) That on at least one occasion there was a fistulous connexion between the abscess cavity and the bladder.

The cause of the recurrent abscess formation is not so certain, even in the light of the pathological report, and it is interesting to speculate.

It is a well-recognized surgical principle that if the normal drainage arrangement of a glandular structure is disturbed, adequate provision for an alternative channel must be made. Neglect of this principle may give rise to stagnation, infection, abscess formation and final eruption to the nearest point of least resistance.

An "excluded" loop of bowel comes into this category. In the standard operation of perineal excision of the rectum (Lockhart-Mummery) the preliminary colostomy is fashioned by making an opening at a point on the colon some considerable distance proximal to the proposed line of section of the rectum. There is thus left behind an excluded segment of bowel whose mucous secretions are expected to drain (against gravity) via the distal opening at the inguinal colostomy. The surprising thing is that this expectation is realized in the majority of cases. In some less fortunate cases the mucus prefers to seep through the carefully sutured line of section of the rectum and adds to the patient's tribulations by appearing in the perineum. In either case drainage takes place and infection is avoided.

In the case described it is likely that the drainage was not adequate. It would be mere guesswork to suggest the reason for this, but such a complication is inherent in the operation of perineal excision of the rectum by virtue of the presence of the excluded stump of distal colon.

Contamination of a distal stump by even a small part of the faecal discharge would also naturally favour the onset of infection.

References.

- DUKES, C. E. (1947), "Management of a Permanent Colostomy Study of 100 Patients at Home", *Lancet*, 2: 12.
LOCKHART-MUMMERY, P. (1920), "Resection of the Rectum for Cancer", *Lancet*, 1: 20.

Reviews.

Handbook of Treatment of Acute Poisoning. By E. H. Bensley, M.B.E., B.A., M.D., F.A.C.P., and G. E. Joron, B.A., M.D., C.M., Dip.Int.Med.; 1953. Montreal: Renouf Publishing Company, Limited. 6½" x 4½", pp. 201. Price: \$2.50.

The Symptoms and Treatment of Acute Poisoning. By G. H. W. Lucas; 1953. London: H. K. Lewis and Company, Limited. 7" x 4½", pp. 320. Price: 27s. 6d.

THESE are two new books dealing mainly with the emergency treatment of acute poisoning.

The first is a useful little volume by co-authors from the Montreal General Hospital and McGill University. Despite the title it gives a description of symptoms as well as treatment. The first section deals with general methods of treatment and the actions and uses of various drugs. Emphasis is placed on the relief of dangerous symptoms before the use of such procedures as gastric lavage. In the second section 39 individual poisons and groups of poisons are arranged alphabetically, and the treatment for each is set out clearly and concisely. The procedures are divided into those to be used before the arrival of the doctor, and those to be used by him. They are listed in a definite order, and the doses of the drugs recommended are repeated under each poison. This book should, therefore, prove of special value to those dealing only occasionally with poisoning cases.

The second book is by the Professor of Pharmacology at the University of Toronto and is a little more detailed. The early chapters deal with the general principles of treatment and the necessary drugs and apparatus. Then follow a very useful chapter on poisoning in children and an excellent section on useful drugs and preparations used in treatment. One hundred and thirty poisons are then dealt with. These are arranged alphabetically and cover a wide range from those which have lately come into prominence to common household articles, such as crayons, ink and cosmetic preparations. The commoner and important poisons are dealt with fully. The difficult question of fatal doses is also faced in this book, and a long list has been compiled from the works of various authorities. Altogether this is an excellent book in its field and contains a fund of valuable information.

Both these books can be recommended to those requiring a quick reference to the latest methods of emergency treatment of poisoning.

Immunity, Hypersensitivity, Serology. By Sidney Raffel, Sc.D., M.D.; 1953. New York: Appleton-Century-Crofts, Incorporated. 9½" x 6½", pp. 542, with 45 text figures. Price: \$5.00.

PROFESSOR RAFFEL, of the Stanford University School of Medicine, is well known to workers in the field of tuberculosis for his contributions to the study of the mechanism of tuberculin hypersensitivity. Now from his pen comes a volume devoted to the subject of immune processes in human disease in general, and the accompanying tissue reactions described as hypersensitivity, and the antibody reaction, and their uses as a tool for biological research.

Let us state at the beginning that this is a most informative and provocative book which will be welcomed by the experimental worker, enlighten the curious and stimulate the young.

Now let us turn to the text. The first 171 pages are devoted to the fundamental concepts in relation to host and parasite, the emphasis being always placed first on immunity, pathogenicity and virulence of the parasite, the humoral and cellular responses of the host, the nature of antibody globulin and the chemical and biological modifications of the molecule in response to the stimulus of an antigen. The lattice hypothesis of Marrack is adopted, discussed and illustrated. The flexibility of the immune mechanisms and their ability to limit the number of potentially pathogenic bacteria is a point well taken and often forgotten. The laboratory techniques associated with the demonstration of antibody are discussed, including the nature of complement, also the modern concept of "incomplete antibody" and the Coombs test for its demonstration.

General and epidemiological aspects of immunity are considered, together with factors influencing them, and then an extremely well-arranged discussion of immediate and delayed hypersensitivity is set out in a way that teachers of this thorny subject would do well to follow.

The third section of the book is devoted to an analysis of the mechanism of acquired immunity in 14 different diseases ranging from pneumonia and tuberculosis through

diphtheria and tetanus, to poliomyelitis and influenza. The abundant problems to be found in individual diseases and the lack of knowledge are frankly acknowledged and stated. However, Professor Raffel has faith and imagination in regard to things to come; he even quotes Smorodintseff's suggestion for the inhalation of immune serum "at the onset and during the course of an influenza epidemic".

The last two sections of the book are concerned with microbial antigens and toxins and cellular antigens, including the blood group antigens, and these are discussed in some detail. It is pleasant to British eyes to see that Professor Raffel prefers the Fisher system of nomenclature for the genes and antigens of the Rh system with the combined information which it conveys.

This book covers a field which is continuously expanding, and every year or two some new principle seems to arise and call for modification or expansion of previous ideas, so that one is tempted to draw a contrast between this book and an older classic on the subject, "Fundamentals of Immunology", by W. C. Boyd. While concerned with the same subject, they are written from completely different points of view. The present volume seeks to integrate the various aspects of the subject into the processes of the normal or diseased subject, whereas the "Fundamentals" seeks to define and analyse the separate and distinct aspects of immunity as a state. The volumes are likely to stand side by side on the shelf, for the worker who uses one will use the other.

The references are listed at the end of the chapter in the order in which they occur in the text, not alphabetically. The quality of the paper is excellent, the type face pleasant and easy to read, and the binding in that satisfactory modern manner by which the book lies open at any page. The proof-reading has been well done—the only lapse discovered was with the chemical symbols for arsenic on pages 43 and 44.

An Approach to Clinical Surgery. By Gerald H. C. Ovens, O.B.E., M.B., B.S. (London), F.R.C.S. (England); 1953. London: J. and A. Churchill, Limited. 8½" x 5½", pp. 310, with 118 illustrations. Price: 22s. 6d.

In this book the author has produced an excellent account of elementary clinical surgery, which is intended to fill in the gap between preclinical studies and the clinical period in the training of the student. It is divided into two parts, the first being concerned with the general principles of sterilization, inflammation, wounds, haemorrhage, shock, infection, operations and dressings. The second part commences with a general scheme intended to cover the requirements of history-taking and the examination in all cases, followed by special schemes for certain specific areas. The general tone of the book is that of an elementary instruction manual, and is very dogmatic, an approach probably best suited to students at the level for whom it is intended. The author has employed an expanded synoptic method in working out his schemes of history-taking and physical examination, and his clear and interesting writing could not fail to impress the student at such an impressionable stage of his career.

Although the illustrations are excellent in both choice and quality, some improvement could be made by adding more, particularly in the chapters on inguino-scrotal swellings and on diseases of the tongue.

This is one of the best elementary books on clinical surgery that has appeared in recent years, and is sure of a good reception in medical schools. It is not meant to be comprehensive, but the aspects of surgery that are covered are done so well that not only the fourth year student will benefit, but it will be a valuable guide to more senior students; even the post-graduate student and the active practitioner could profit by an occasional return to the elementary principles set out in this book.

Functional and Surgical Anatomy of the Hand. By Emanuel B. Kaplan, M.D., F.A.C.S.; 1953. Philadelphia: J. B. Lippincott Company. Sydney: Angus and Robertson, Limited. 10" x 7", pp. 304, with 132 illustrations. Price: £5 7s. 6d.

This book is "designed to aid the Orthopaedic Surgeon, the Plastic Surgeon, and the General Surgeon concerned with restriction of function of the hand; the Anatomist interested in details of structure and function; and also the General Anatomist". The author is Assistant Professor of Anatomy at Columbia University, and is also an orthopaedic surgeon.

The book is divided into three parts: the first part deals with the hand as an organ, the second with the structure

and function of the component parts, and the third with surgical anatomy. The author states that this work is not an encyclopaedia of the hand, and certain aspects have not been included.

The illustrations are very good indeed, and very numerous. Most of them are from dissections made by the author. The chapter on motors and mechanisms of the fingers, thumb and wrist call for special commendation, and the illustrations are exceptionally good and illustrate the text very well indeed. This chapter should be very valuable for the orthopaedic surgeon and others who have to deal with various disabilities of the hand.

The chapter on surgical approaches is not in parts up to the high standard achieved in the rest of the work. There is very little mention of the more superficial connective tissues of the hand and fingers apart from Dupuytren's contraction. The diagrams of the surgical approaches could be much improved, as some of them have been modified with the advent of antibiotic therapy.

There is a very useful bibliography, and most of those who have written on the hand in both articles and books—and they are very numerous indeed—are included.

The book is printed in clear type and written in a very good style, and compares well with the best we have learned to expect from American publishers.

Biological Hazards of Atomic Energy: Being the Papers Read at the Conference Convened by the Institute of Biology and the Atomic Scientists' Association, October, 1950. Edited by A. Haddow; 1952. Oxford: The Clarendon Press. Melbourne: Oxford University Press. 9½" x 6½", pp. 246, with 94 illustrations and text figures. Price: 63s.

This book contains the papers read at the conference convened by the Institute of Biology and the Atomic Scientists' Association held in October, 1950.

It may be said at the outset that Professor Haddow has gathered here material of vital interest to every scientist with any interest in radioactivity. Papers have been contributed mostly by British authors, whose names are numbered among the leaders in radiobiological research.

The early papers are devoted to a study of the biological responses of the cell as a unit to the ionizing radiations. F. C. Spear discusses the biological response of cells and tissues to radiation, but the whetted appetite finds his chapter disappointingly brief, for an authoritative review of this whole subject would have been welcomed at this time.

L. H. Gray shows that the biological efficiency of any particular type of ionizing radiation is in general proportional to the linear density of ions formed along the track. C. D. Darlington discusses the fate of cells damaged by radiation in regard to ultimate hereditary considerations. D. G. Catcheside in a masterly article describes the constitution of the nucleus and the mechanism of radiation-produced gene mutations. If the accepted tolerance dose of 0.5r per week was received continuously by generation after generation of the whole population, a new genetic equilibrium would be attained in about seven generations. At this time, in addition to gross genetic defects, many minor ones would be appearing which might be expected to reduce the fitness of many apparently normal individuals and so would produce a disastrous effect on the race. K. Mahler, discussing the same problem from the point of view of posterity, stresses the necessity for proper protection of the germ plasma of patients, scientists and the general population, which latter may be exposed to risks from operation of atomic energy plants or weapons.

A. Glucksmann discusses tumour induction by radiation and shows that growths may be induced on surface skin or in marrow, in the lungs from inhalation, and in the bones from deposition. Radiation may sometimes be carcinogenic in its action, and tolerance doses have been formulated to avoid minor precarcinogenic injuries. C. J. Neary discusses the evaluation of tolerance dose levels from the point of view of the individual, the community and posterity. Different forms of radiation have different damage potentialities which are considered with the type of exposure and the tissue at risk.

Chapters on the risks associated with the use of radioactive iodine, iron, carbon and strontium follow—the latter a particularly thorough study by Dr. Janet Vaughan and her colleagues.

W. M. Dale and J. F. Loutit produce work on the use of substances which diminish the biological effectiveness of radiations. These protective substances are akin to normally

existing physiological substances which are capable of reacting with oxidizing or reducing ions produced as short-time products of radiation. If such a "protector" is added so that normally existing and added protector are both together in the medium as solutes, the radiation damage is shared; and so the biological level of damage is lessened. Most protectors are toxic in effective quantities, but the existence of such substances does offer a glimmer of hope to a world frightened by the possibilities of misuse of atomic energy.

The volume is concluded by two chapters discussing the moral issues arising from the development, use and abuse of nuclear energy.

Professor Haddow receives our grateful thanks for this collection of papers, which has been presented in the tradition of the Oxford University Press.

An Introduction to Social Biology. By Alan Dale, B.Sc.; 1953. London: William Heinemann (Medical Books), Limited. 9" x 6", pp. 442, with 199 illustrations. Price: 21s.

THE importance of a biological foundation for all the social sciences has been stressed by Sir Cyril Norwood, President of the Educational Advisory Board in Britain. Mr. Alan Dale, who is a science graduate and who has made a special study of biology, tells us that his book was the outcome of a series of discussions with senior boys in a large secondary school. "The author soon realised that a degree course in biology was a not altogether adequate preparation for the task he had undertaken and a considerable amount of supplementary reading had to be done to enable some measure of authoritativeness to be brought to the discussions." The largest and, one may state with some assurance, the most important addition to his restricted biological knowledge was a wide reading in medical literature, and here one can pay a tribute not only to the factual accuracy displayed but to the distribution of emphasis and the general perspective. There are fourteen chapters in the book dealing with life in space and time, man and evolution, man as an animal, sex, inheritance, reproduction, social hygiene, history of medicine, food and drink, the balance of nature, population, social life amongst animals, some reasons for man's success and finally the nature of life. The exposition is exceedingly clear and the touches of humour are intriguing. Mr. Dale has a gift for lucid and useful analogy; for example, in dealing with some of the complexities of the terminology of genetics he writes: "A cell may be likened to a box containing, say, ten different pairs of socks. There will be twenty socks altogether, the diploid number, but only ten different kinds of socks, the haploid number. The two socks constituting a pair will be homologous." The parts dealing with sex are delicately phrased and eminently sane. Too often the writer who wishes to present adolescents with "the facts of life" gives the impression that he is himself sexually vitiated; this forbidding feature is happily absent. We have just one small criticism to make, namely, that the author goes so deeply into genetic intricacies that only a few unusually bright boys and girls will be able to follow the argument. This occupies, however, only a small part of the wide territory covered by the author. This is a book which we should like to see prescribed for reading and study in secondary schools and is one which will receive a welcome from teachers, wise parents and all medical men.

Clinical Tropical Diseases. By A. R. D. Adams and B. G. Maegraith; 1953. Oxford: Blackwell Scientific Publications. 9" x 6", pp. 518, with 65 illustrations. Price: 40s.

THE issue of a new work on tropical medicine in English is not, of course, the outstanding event it would have been twenty years ago. Nevertheless, the production of a book of this nature, especially one designed for the practitioner rather than the student, is a matter of great interest to all living in countries subject to tropical disease. Authorship by two such outstanding authorities as Adams and Maegraith ensures the provision of sound advice and information about the therapeutic and clinical aspects of disease. The work is of convenient size, a most important quality in the tropics, and deals primarily with the clinical manifestations, diagnosis and treatment of disease. Information is as up to date as is possible in any volume on a subject altering as rapidly as tropical medicine. If any criticism is to be offered of this excellent work it is in connexion with the system of the alphabetical pagination of disease adopted. This has resulted, for example, in black-water fever, the most important complication of malaria, being discussed some hundred and fifty pages before the primary disease itself. Further difficulty is experienced when

some of the more important virus diseases are dealt with. Here we find dengue, Rift Valley fever and phlebotomus fever included under the very broad term "Virus Fevers", while yellow fever belonging to the same group is to be found under its own title at the very end of the book. The book is excellently produced and can be confidently recommended to all those actually practising medicine in the tropics rather than to those entrusted with medical administration in such areas.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Insecticides: Manual of Specifications for Insecticides and for Spraying and Dusting Apparatus", by The Expert Committee on Insecticides of the World Health Organization; 1953. Geneva: World Health Organization. 9½" x 6½", pp. 134, with 11 text figures. Price: £3.

The scope of the book is implicit in its title.

"History of the Second World War: United Kingdom Medical Series, Editor-in-Chief, Arthur S. MacNalty, K.C.B., M.A., M.D., F.R.C.P., F.R.C.S. "The Civilian Health and Medical Services", edited by Arthur Salusbury MacNalty, K.C.B., M.A., M.D., F.R.C.P., F.R.C.S. Volume I: The Ministry of Health Services; Other Civilian Health and Medical Services; 1953. London: Her Majesty's Stationery Office. 10" x 6½", pp. 452. Price: 45s.

The first of two volumes to be devoted to this subject.

"Modern Trends in Diagnostic Radiology (Second Series)", edited by J. W. McLaren, M.A., M.R.C.P., F.R.C., D.M.R.E.; 1953. London: Butterworth and Company (Publishers), Limited. Sydney: Butterworth and Company (Australia), Limited. 10" x 7", pp. 424, with 359 illustrations. Price: £4 15s. 6d.

There are 22 chapters by many authors.

"Fool's Haven", by C. C. Cawley; 1953. Boston: House of Edinboro, Publishers. 8" x 5½", pp. 210. Price: \$2.75.

A novel which describes the trial and conviction of a mother in the death of her child from appendicitis because she neglected to seek proper treatment while the faithful healer responsible went free.

"Diseases of Women", by ten teachers under the direction of Frederick W. Roques, M.D., M.Chir., F.R.C.S., F.R.C.O.G., edited by Frederick W. Roques, John Beattie and Joseph Wrigley; Ninth Edition; 1953. London: Edward Arnold and Company. 8½" x 6", pp. 488, with 177 illustrations. Price: 28s.

The first edition was published in 1919.

"Aspects of the Psychology of the Tuberculous" (A Psychosomatic Medicine Monograph), by Gordon F. Derner, Ph.D.; 1953. New York: Paul B. Hoeber, Incorporated. 9½" x 6½", pp. 120. Price: \$3.50.

The book presents "a study of the attitudes, feelings, and personality characteristics of hospitalized tuberculosis patients as investigated by several psychological procedures".

"The Parietal Lobes", by Macdonald Critchley, M.D., F.R.C.P.; 1953. London: Edward Arnold and Company. 9½" x 6", pp. 488, with 10 plates and 137 illustrations. Price: 70s.

The author introduces the book with a quotation from Sir William Gowers to the effect that he has written because of a compulsion against which it is unwise to strive.

"Symposium on Fatigue" (Published for the Ergonomics Research Society), edited by W. F. Floyd and A. T. Welford; 1953. London: H. K. Lewis and Company, Limited. 9½" x 6½", pp. 204, with 44 illustrations. Price: 24s.

The 20 papers comprising this symposium were originally presented to the Ergonomics Research Society in March, 1952, at the College of Aeronautics, Cranfield.

"The Heart Beat: Graphic Methods in the Study of the Cardiac Patient", by Aldo A. Luisada, M.D.; 1953. New York: Paul B. Hoeber, Incorporated. 10" x 7½", pp. 540, with 273 illustrations. Price: \$12.00.

Written to correlate a great mass of data on graphic methods, to present them with a unified concept and to correlate them with the appropriate clinical pictures.

The Medical Journal of Australia

SATURDAY, DECEMBER 12, 1953.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: surname of author, initials of author, year, full title of article, name of journal without abbreviation, volume, number of first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

A DECREASING LEG—AN INCREASING BELLY.

THE whole domain of the metabolism of fat is beset with unsolved problems. How fatty matter in food is absorbed into the general circulation, how much and in what manner by the portal blood, how much and in what manner by the lacteals, have engaged the sustained attention of experimental physiologists, but much uncertainty still exists. In this connexion a point of some interest arises, namely, the greatly augmented powers of assimilation of oil and fat manifested by the human being in polar regions. Blubber there is eaten in quantities that would evoke nausea and gastric insurgence, if indeed one-fourth of the amount could be actually swallowed in warmer zones. Obviously liver, pancreas and the absorbing mechanisms are stimulated to unwonted activity, but just how this happens has not been explained. Adipose tissue in the living animal can rapidly give up its substance for the general weal during starvation or other inadequate supply of calories; in what manner, through what agency and arising from what stimulus this comes about one would like to know. Is there lipoclastic disintegration through an enzyme or does the fatty material enter the blood in ultra-microscopic form? If the latter, what determines the size of the units? In this connexion it may be observed that the particles of emulsified fat admitted to the blood-stream by the thoracic duct are sub-capillary in diameter, else embolism would result. It is an old observation that the melting point or, better expressed, the solidifying point of the fat in adipose tissue varies with its position in the body, being highest in the warmest situations and lowest in the coldest. Neat's foot oil has a value in leather dressing and lubrication, because it comes from the feet and shin bones of cattle where it would be exposed to low temperatures in winter and in consequence remains a liquid under ordinary conditions

of use. Contrast this with suet, which is a brittle solid when taken from the carcass. How does each region of the body of the warm-blooded animal single out the fat with correct solidifying point?

When we come to variations in the amounts of fat deposited at each site we enter an unexplored territory of knowledge. Medical science is aware of pathological conditions in which adipose tissue grows like a malignant tumour. This is a diseased state, but calls aloud for examination in the hope that when the cause has been unravelled relief may be possible. The surgeon, as is well known, is unhappy when operating on the obese patient as he is aware of the difficulties attending healing of the wound. The disturbances of fat metabolism arising from endocrine imbalance are well known; the emaciation produced by overaction of the thyroid is easily understood as it follows highly augmented general metabolism, but the deposits of fat accompanying pituitary insufficiency escape all efforts at analysis. In this regard mention might be made of the retroorbital fat in exophthalmic goitre. The old explanation was that the protuberance of the eyeball by over-stimulation of smooth muscle led to a deposition of fatty tissue as a sort of packing, but the observation of Dr. John Devine, described in this journal, that a glass eye was equally protruded in a case of Graves's disease, excludes this.

One very interesting branch of this inquiry concerns the physiological variations in the deposition of adipose tissue which occur during various phases of life. The chubby cheek pads of the baby are obvious to all and so is the recession later on. Conan Doyle in his history of the first World War paid a glowing tribute to the valour of the Australian soldier and referred to him as "lantern-jawed". As a medical man he knew well that the same person in childhood displayed the usual thick pads of all healthy infants. Shakespeare in his *Henry IV* (Part I) makes the Chief Justice rebuke Falstaff for pretending to be young. "Have you not a moist eye? a dry hand? a yellow cheek? a white beard? a decreasing leg? an increasing belly?" We may hazard the conjecture that Shakespeare was repelled by certain aspects of old age, for his descriptions are most realistic. Adam in "*As You Like It*" may be cited as an exception, for he boasted that by chastity and temperance his old age was as a lusty winter, frosty but kindly, and so he could share in the hardships awaiting his master; but the great dramatist makes Adam succumb early to exhaustion, which is precisely what would happen in actual life. Shakespeare's keen observant eye, which missed little, noted that in late middle age the legs lose girth whilst the abdomen gains. What is the origin or significance of this? Some say that discontinuance of stooping conditions the abdominal adiposity; others are equally convinced that the adiposity inhibits stooping. The truth may lie in between or there may be that reciprocal reinforcement which Herbert Spencer asserted is so common a feature in biological happenings. But certainly this strange shift of fatty tissue from the legs to the abdomen is a fairly regular concomitant of old age and must have some meaning. Every healthy girl in her growing period passes through a stage when she is exceptionally well fleshed; later, in part by deliberate attention to diet, and in part through causes above her control, she acquires a slimmer figure, but never loses, except under pathological

conditions, the superficial adiposity which has an æsthetic appeal as well as a blanketing action against cold. Truly the unexplored area in the territory of the physiology and pathology of adipose tissue is greater than the explored and demands investigation.

Current Comment.

POST-MATURITY AND THE INDUCTION OF LABOUR.

POST-MATURITY is frequently listed as an indication for the induction of labour, but the question is decidedly controversial. This is inevitable for at least two reasons. First, it is difficult to state with any certainty when post-maturity exists, and secondly, there is no general agreement on whether the hazard offered to the infant by post-maturity is serious and, more important, whether that hazard outweighs the possible danger offered to both mother and fetus by induction of labour. The conservative view has been well expressed by Professor Bruce Mayes,¹ who includes post-maturity in his list of indications for induction of labour "merely to condemn it as an indication". He considers that the mere fact that birth has not occurred within the allotted span is no reason for interference, the correct management being to continue regular prenatal supervision and anticipate a natural onset of labour. The potential hazard to the baby from post-maturity is regarded as less than that from induction of labour. On the subject of induction of labour generally, Professor Mayes advises a negative approach and avoidance of induction unless the indication is absolutely valid. "The life story of the sound obstetrician is one of decreasing inductions with increasing years."

Professor Mayes's views will be acknowledged by most people as the only right approach for the teacher of obstetrics, although some experienced obstetricians are not prepared to accept this conservative view in their own practice. The point to be borne in mind is that a swing away from the conservative view may lead to the unfortunate situation described by J. Robert Willson,² in which the practitioners adopt widespread use of induction of labour when they are "unqualified either to perform it or to manage the complications which inevitably will arise". Willson's statements imply that he knows such widespread use to be actually occurring, and he lists as the reasons for it the approval by expert obstetricians, the supposed decrease in fetal mortality, and convenience—the convenience referred to being allegedly that primarily of the mother. He has the impression, however, that the mother and her child benefit less than does the physician by the "unindicated" induction of labour, and that, apart from his convenience, little is accomplished by the procedure. To confirm this impression, he carried out studies which he has recorded. Over a period of four years at Temple University Hospital, Philadelphia, labour was induced in 180 of 9667 deliveries (1.86%). In only 50 of these 180 cases was there no medical indication for termination of pregnancy. Examination of results indicates that there were no maternal deaths at this stage of pregnancy which might have been prevented by elective induction of labour. An analysis of fetal deaths occurring after the fortieth week of pregnancy provides little evidence to suggest that elective induction of labour could have altered the result. In only five cases, in all of which the pregnancy terminated in stillbirth, might elective induction at term have prevented fetal death, though even in these cases there is no definite proof that the babies would have survived. Willson states that the reported results in elective induction of labour at term in normal women show a uniformly low fetal mortality, but he points out that this is to be expected, since the fetal loss at this stage of pregnancy is at a minimum under any circumstances. In a total of 2697 deliveries in the Temple University Hospital during

the past year, the total fetal loss of infants weighing 1000 grammes or more at birth was 58 (21.7 per thousand live births); of these, 67% weighed less than 2500 grammes, while only 20% had reached the fortieth week of gestation. Willson considers that if this is coupled with the fact that no more than five deaths among infants at full term during the four-year period at the hospital might conceivably have been prevented by induction of labour, it suggests that induction is seldom necessary. Problems with the post-term pregnancy and the post-mature infant are virtually non-existent at the hospital and it is considered that true post-maturity is rare. Willson readily accepts the fact that the induction of labour can be performed with relative safety on properly selected patients by properly qualified doctors, but he points out that, regardless of who performs the procedure, an unavoidable risk is added for the mother and her infant. This risk is increased many times if all possible precautions are not taken. Since his studies have produced no proof that either fetal or maternal mortality is reduced by induction of labour in normal pregnancy at term, he considers that there is no justification for its use. A discussion which followed the presentation of Willson's paper produced fairly general approval of his views, with a tendency on the part of most of the speakers to imply that, of course, the conservative approach did not completely apply to the speakers themselves. In brief, they contended, no doubt with sound justification, that they were experienced obstetricians and that they were in a position to determine when induction was reasonable, and also to carry it out skillfully. They did not approve of its widespread unregulated use. Unfortunately, not much attention seemed to be paid to one important point raised by Willson, which he again emphasized in his closing remarks. That point was the influence of the consultant and his methods of practice on the younger man. Willson pointed out that every hospital should be a teaching institution, and each individual who had the training of resident medical officers had the tremendous responsibility of teaching proper conservative obstetric methods. Willson said that he was not concerned primarily with the inductions performed by the skilled and experienced specialist, although he doubted that they were innocuous. He was concerned with the small general hospital in which the resident medical officer saw 50% to 75% of labours induced and came to believe that that was the normal and desirable method for every patient. He was certain that medical students, resident medical officers and family doctors should be taught that for the normal patient the spontaneous initiation of labour was preferable to induction.

Quite a different viewpoint, based on a different picture, is presented by Dudley Racker, G. H. Burgess and Gerald Manly.³ They carried out an investigation in which they divided the patients attending their antenatal clinic into two groups without any conscious selection. The patients in one group, called the induced group, were admitted to hospital on the day before the expected date of confinement. On the date of confinement they were given such simple stimulants as a hot bath and an enema, but no drugs, and if labour had not started on the next day, the membranes were artificially ruptured. The members of the second group, called the post-mature group, were allowed to continue to spontaneous labour unless, as happened in a few cases, labour was induced for some other obstetric reason. A third group of patients acted as controls; they were unselected patients who had come to natural delivery at term in the previous two years, the term for the present purpose being from seven days before to seven days after the expected date of confinement. The fetal mortality due to stillbirths was 1.54% in the control group, 1.47% in the induced group and 4.63% in the post-mature group. The members of the post-mature group included in this finding were more than seven days past the expected date of confinement. A further analysis of the stillbirth rate in the post-mature group revealed a percentage of 2.31 in the group from seven to thirteen days post-mature, and 8.72 in the group fourteen days or more post-mature. Racker, Burgess and Manly state that

¹ "A Textbook of Obstetrics", 1950.

² *Am. J. Obst. & Gynec.*, April, 1953.

³ *Lancet*, November 7, 1953.

the difference between the fetal mortality rates of the two post-mature groups and that between the induced group and the group in which the post-maturity was more than fourteen days, are statistically significant. The figures are certainly striking. Certain possible criticisms of them readily spring to mind, but it is well before making such criticisms to consider the purpose of this investigation. The reasons stated by the authors are that they felt that the question of post-maturity needed clarifying, and they wished to assemble evidence on which to base the management of these cases. Their argument runs as follows. Firstly, it is impossible at present to diagnose post-maturity either clinically or radiologically with anything approaching sufficient accuracy on which to base any treatment. Consequently, it is impossible to treat all the patients individually. Next, there is strong theoretical evidence that the foetal environment deteriorates after term; therefore labour should be induced at or after a certain interval following the expected date of confinement. All this is, in some ways, unsatisfactory, as Racker, Burgess and Manly frankly concede, but it has a degree of practical merit. The evidence is discussed for the deterioration in foetal environment after term, and this cannot be readily dismissed. It is not at all diminished by our inability to be certain when a state of post-maturity actually exists. It would appear that in cases of pregnancy which appear quite normal, the foetal condition may be deteriorating dangerously; and as a result it is suggested that until such time as we can judge the condition of the foetus *in utero*, it is safer to deal with cases of labour according to some rule rather than on an individual basis. The plan suggested here is that, except in cases in which there is serious doubt about the history, it is dangerous to allow women to exceed the expected date of confinement by more than a short period, and that after that period labour should be induced. What that period is, it is hoped that further work will show, but it seems to be about seven days.

Here the matter stands at present. It is to be hoped that this work will be followed up by other investigators as well as by Racker, Burgess and Manly. The older conservative view of induction in the absence of medical indications has considerable weight of authority behind it and must be respected. On the other hand, the work of Racker, Burgess and Manly makes it clear that we need to know a good deal more about post-maturity and, if possible, to learn how it may be definitely detected.

ALLERGY IN IDENTICAL TWINS.

THE biologist is fortunate that much of his research can be performed upon animals which habitually give birth to litters, for few physicians have the opportunity even to observe a series of paired offspring reared in a similar environment. Studies on identical twins are of particular value, and it is of interest to find a paper by Ralph Bowen,¹ of Texas, dealing with the incidence of allergic manifestations in 59 pairs of monozygotic twins, ranging in age from eight weeks to fifty-six years, the majority being between six and fifteen years. A family history of allergy was present in 85% of cases. In only seven instances did both twins show similar allergic manifestations, three pairs having eczema (two later developing asthma), two pollinosis and two asthma and nasal allergy. Certain generalizations made by Bowen concerning the remaining 52 sets of twins, in which only one child of each pair showed significant symptoms, may be noted. The allergic twin is likely to be more passive and less active and aggressive than his healthy brother. In Bowen's experience one twin is usually dominant as the result of the existence of competition and hostility which develop over the years in spite of the concurrent development of a degree of interdependence: as a rule, the non-allergic child is the leader. Bowen considers that the appearance of allergic signs and symptoms within a few

weeks of life in one twin argues against the idea of parental rejection as an aetiological factor, but he does not expressly state what significance he attaches to the personality differences noted above.

Three paired case histories are presented, but it is a matter for regret that the findings in each set of twins are not at least summarized. The "leader" of two female twins, both of whom had a past history of contact dermatitis, became asthmatic, reacting strongly on skin test to a number of agents to which her sister showed much smaller reactions. In the other two sets of histories recorded, the affection was strictly unilateral clinically and on skin testing. In each pair of twins the electroencephalographic pattern was almost identical, which is of interest in view of reports of abnormal electroencephalographic patterns in allergic subjects.

Bowen's major conclusion is that the low incidence of dual allergy in identical twins is strong evidence against the concept that allergic manifestations are the result of transplacental sensitization. Certainly his observations are significant, but there are some grounds for criticism. His figure of seven pairs showing dual allergy refers only to those in which both twins had symptoms of a similar pattern and sufficient severity to require medical attention. In the present state of allergic knowledge it seems unwise to insist upon identical symptomatology, or, in fact, upon the presence of symptoms, certainly of symptoms of presumably moderate severity. It would be valuable to have a study of the incidence of positive results to skin tests—an objective phenomenon—in identical twins, particularly if correlated with similar tests on parents and perhaps siblings. The next step would be to study the results in relation to symptomatology, which is certainly determined by factors other than demonstrable skin sensitivity. Put in another way, the emphasis might well be placed initially on the question of the inheritance of an "allergic state", the fact being borne in mind that symptoms even in identical twins may be differentially modified by environment. Finally, the author's claim that his survey "correlates particularly the medical and psychological problems among non-placental twins with allergies" would scarcely be supported by psychiatrists when only three family histories are briefly reported.

Twin studies offer a field of investigation of inestimable importance in diseases in which the respective roles of heredity and environment are disputed, but it is a field which has its own particular difficulties. Doctors, particularly allergists and psychiatrists, would be greatly indebted to Bowen if he were to publish a more exhaustive survey of his series.

ADDISON'S DISEASE.

It is remarkable that control of the two diseases with which Thomas Addison's name is associated, both originally described as fatal, may now be ranked among the triumphs of rational therapeutics. The anaemia of pernicious anaemia has become easy, perhaps dangerously easy, to treat, and, as Professor D. M. Dunlop observed in a discussion at the Royal Society of Medicine,¹ therapeutic advances in the last twenty-five years have greatly improved the outlook for those suffering from Addison's disease of the "suprarenal capsules". E. N. Allott, reviewing the chemical pathology of the latter disease, pointed out that these advances began in 1927 with the observation that the administration of sodium chloride prolonged the life of the adrenalectomized animal, and that this was followed by Swingle and Pfiffner's preparation of an active adrenal extract in 1930.

Some points of clinical significance made by Allott may be noted before considering treatment, with which the discussion was mainly concerned. The excretion of 17-ketosteroids, which are among the breakdown products of cortical hormones, is lowered to 0 to 8.0 milligrammes per day, values in the higher range being found in males,

¹ J. Allergy, May, 1953.

¹ Proc. Roy. Soc. Med., July, 1953.

extremely low values in men suggesting an associated testicular failure and therefore a pituitary origin for the syndrome. The test is perhaps of particular value in the few cases of Addison's disease in which the usual raised serum potassium and urea and lowered sodium and chloride levels are not found. Administration of ACTH to a person with Addison's disease does not affect the urinary ketosteroids, whereas in Simmonds's disease there is sometimes a delayed increase in ketosteroid excretion: in the normal subject the increase is considerable and is rapid. When cortisone is given, a rise is found in Addisonian patients, but not in normal individuals, in whom cortisone suppresses endogenous corticosteroid secretion by inhibiting the secretion of ACTH by the anterior lobe of the pituitary gland. Cortisone also corrects the inhibition of water diuresis which occurs in Addison's disease and which forms the basis of the first part of Kepler's water-excretion test, and it counteracts the hypoglycaemia commonly present. Sometimes the electrolyte changes in the blood may be controlled by cortisone alone. Deoxycortone or DOCA will invariably control the latter, but has no effect on the two previous manifestations mentioned. R. I. S. Bayliss added to this aspect of the discussion the fact that the plasma level of 17-ketosteroids (normal 5-15 microgrammes per 100 millilitres) in patients with Addison's disease was nil, no rise being produced by ACTH.

In Professor Dunlop's experience 70% of cases conform to the classical clinical description, and present little diagnostic difficulty. Radiological demonstration of adrenal calcification is a valuable sign in the remainder, but otherwise the diagnosis rests upon the proper interpretation of a number of special investigations, most of which have been mentioned above. Thorn's test, which depends upon the failure of ACTH to produce eosinopenia in the absence of functional adrenal cortical tissue, was considered unreliable by several speakers. Dr. Leonard Simpson, in regard to early diagnosis, made the point that before the clinical picture is fully developed, patients may during periods of stress well show acute adrenal insufficiency due to associated trauma or infection, while remaining quite well in between these episodes.

Simpson's contribution is an excellent historical review of the treatment of Addison's disease, but for our present purpose discussion will be confined to the role of cortisone. Simpson considers that cortisone therapy will ultimately prove the treatment of choice, with the proviso that some cases will require additional salt or DOCA to maintain normal serum electrolyte levels. The advantages of cortisone therapy over DOCA and/or salt therapy are impressive, and may be listed as follows: gain in weight, strength and well-being, with loss of apathy and depression and increased capacity for effort; elimination of hypoglycaemic episodes; tendency for restoration to normal of the blood picture, electrocardiogram and electroencephalogram. As previously mentioned, the blood electrolytes may also return to normal with a rise in the lowered alkali reserve. Simpson believes that there is little danger of producing a flare-up of tuberculous activity as a specific result of cortisone treatment, firstly because the dose used is actually within the physiological range, and secondly because patients deficient in cortisone are already more susceptible to infection than normal individuals. He admits that the risk is present, but neither he nor Thorn has observed a case in which it has occurred. Cortisone is unquestionably invaluable in the treatment of Addisonian crises, the action being quicker if it is given orally than by intramuscular injection; it may also be given intravenously. Intravenous administration of saline and glucose may also be required if the patient's condition is serious: one imagines that in such circumstances few physicians would care to withhold DOCA. However, the best treatment of crisis is still its prevention, and the best prevention is cortisone, the usual dose being 25 milligrammes daily by mouth.

Dunlop gives figures which indicate the steady improvement in the prognosis of Addison's disease over the last twenty-five years. Of 30 patients treated prior to the introduction of DOCA, only four lived two years or more,

none living for five years. On the other hand, 15 of 30 patients treated after the introduction of DOCA lived longer than two years, nine being alive after five years. Fourteen survived into what Dunlop terms the "cortisone era" and he has had two new cases. None of these patients has died in the two years since the introduction of cortisone, most are at work, and two have had successful pregnancies. In fact, death may not prove to be the inevitable consequence Addison associated with the diseased condition of the suprarenal capsules "provided the lesions involved the entire structure of both organs".

THE RED CELLS IN CARDIAC FAILURE.

THE blood volume in relation to cardiac failure is of considerable importance as regards both its size and its composition. Naturally the subject has accumulated an extensive literature, and in a recent comprehensive survey of the subject dealing with the more important aspects, Sven Hedlund has collected some 300 references without exhausting the list of those who have contributed to it.¹ Hedlund has written a monograph of 132 pages incorporating a wide review of the literature and the results of his own researches. This inquiry concerned chiefly determinations of the various components of the blood during cardiac failure, concentrating mainly on the cell volume and the volume of the plasma; for the latter the P_{50} method was used. The author's purpose was to investigate the complicated problems related to the variations in the total red cell volume and their size during cardiac decompensation; this in turn called for examination of erythropoiesis, though it was not practicable also to study the synthesis of haemoglobin. In addition, changes in the reticulocytes were followed in relation to the oxygen saturation of the arterial blood. Hedlund found it necessary to pay special attention to other factors of clinical importance, such as the age and sex of the patient, the type and duration of the cardiac decompensation, and other conditions such as oedema, changes in venous pressure, and other phenomena related to circulatory stasis. The condition of the liver was also studied, and the rate of destruction of the red cells. Hedlund claims that a full survey of the questions involved can be satisfactorily carried out only by studying all factors of importance, since the value of observations limited to special features only may be misleading. It is obvious that even a monograph with so wide an ambit must be compressed to cover so many phases of the blood state in cardiac failure, and little more than the main conclusions can be given here. The first quarter of the monograph is occupied with a review of the literature on the various methods of haematological investigation employed, and after a brief statement of the type of clinical material used, most of the remainder is taken up by an exposition and discussion of the actual investigations carried out on patients with cardiac failure. It should be noted that adequate controls were employed, in order to check the validity of the experimental methods and their statistical aspects. The possible variations in different vascular areas are duly considered by the author; in several severely decompensated patients blood has been simultaneously withdrawn from an arm vein and the brachial artery, and a stagnant area like a varicose vein in the leg has also been used. Dilution curves were constructed, and the mixing of labelled corpuscles was observed. An interesting chapter is that dealing with the finding in the bone marrow under conditions of circulatory failure. It was found that the percentage of nucleated red cells was significantly, though not greatly, increased, and these variations were not related to age or sex. The development of the white cells was found to be somewhat retarded, with some "toxic" granulation. The total red cell volume was estimated in 55 cases of decompensation, and brought into relation to the body surface. In general the volume of erythrocytes was higher in the patients with heart failure than in control subjects. Clinical features affecting the red cell volume included the duration

¹ *Acta med. scandinav.*, 1953, Supplement 284.

of congestion, the heart volume and arterial oxygen saturation. As might be expected, the duration of congestion due to valvular heart disease was less than that found in the vascular diseases. Higher values for plasma volume determination were found in patients with decompensation. Reticulocyte counts tended to diminish with the lessened anoxia of clinical improvement. The mean corpuscular diameter also showed some decrease as compensation was established. Though variations in the synthesis of haemoglobin, if any, are not discussed in this brief review, a little may be included about Hedlund's findings for the estimation of serum iron. Both men and women suffering from vascular heart affections showed a significant reduction in the serum iron when compared with the values found in control subjects; women with valvular affections showed a lower value also, but with men the slight fall was not significant. The size of the series examined is not sufficient basis for conclusions, but the author in his discussion sums up this and other variations seen in the red cell series, by stating that it seems likely that increased erythrocytic activity produces cells with a larger mean diameter, higher maximal resistance, and a shorter term of life, but when the output of such cells from the bone marrow falls, "while an increased hemolysis of other red cells continues, an increased content of serum iron will appear". It seems possible that an iron deficit may impose some modified limit on cell regeneration, though so far as the author observed, differences found in the values of serum iron of patients with vascular and valvular diseases did not affect the synthesis of haemoglobin. It appears to be anoxia which, possibly with some additional endocrine factor, Hedlund thinks, elicits a polycythemic reaction. Perhaps most interesting to the clinician is the generalization that studies of the changes in blood formation during a period of treatment which leads to compensation indicate that "a population of macrocytes, with a supposed shorter lease of life than normal, disappears from the circulation". Here we have evidence of how sensitive the physiological processes are to anoxia; perhaps no practising physician needs to be reminded of this, but it is a useful fact to be in the forefront of the mind of the therapist.

DIFFUSE SYSTEMIC SCLEROSIS.

THE work of Klemperer and Selye together with the introduction of ACTH and cortisone therapy, which is at least partially effective, has done much to stimulate interest and research in the "collagen diseases". These may be regarded as including several strange conditions, which, despite certain similarities, possess some sufficiently distinctive characteristics to justify considering them as separate entities. Among these are *lupus erythematosus*, well reviewed recently by Sir Henry Cohen and E. F. B. Cadman,¹ *polyarteritis nodosa*, which seems to be more frequent in recent years than can be accounted for by improved diagnosis, dermatomyositis and scleroderma, or to use the term preferred by E. R. Cullinan, diffuse systemic sclerosis. Cullinan, in a paper presented at the Royal Society of Medicine,² discusses the question of terminology in this disease historically, commencing with Raynaud's observations in 1862, and concluding with a review by Goetz, who in 1945 proposed the term "diffuse systemic sclerosis". In effect, earlier investigators, lacking the specialized techniques necessary for the demonstration of internal lesions, attached the names scleroderma, acrosclerosis and sclerodactyly to the more obvious features of the condition. Since lesions were found elsewhere than in the skin in all 14 of Cullinan's patients, it is likely that no significant distinction can be drawn between localized and generalized forms of the disease. A similar trend is found in Cohen and Cadman's study of *lupus erythematosus*, for these authors recognize as clinically but not fundamentally distinct variants the chronic discoid type, with a localized or generalized rash, but without constitutional symptoms, and the systemic type, with or without rash.

Pathologically, the skin changes in diffuse systemic sclerosis are characterized by thickening and ultimately occlusion of smaller arterial branches and progressive increase in fibrous tissue, associated with atrophy of sweat glands and hair follicles. The thickened, shiny and fixed skin may show patches of gangrene and ulceration, especially at the ends of the fingers, which are characteristically tapered, lacking in mobility and often fixed in partial flexion. Clinically, the earliest manifestation is Raynaud's phenomenon, although, according to Roxburgh,³ the skin changes may be first found about the shoulders and neck. The feet are sometimes involved later and there is a gradual centripetal spread. Calcareous deposits may occur in the soft tissues, especially over pressure points. The smooth immobile facies is a well-known late phenomenon. Cullinan deals very briefly with pulmonary and cardiac involvement. Myocardial fibrosis and pericardial effusion may be manifested clinically by the development of a triple rhythm and congestive cardiac failure. Scattered pulmonary lesions have been described, and in the ensuing discussion it was suggested that these might be due to "spill-over" associated with oesophageal disorder; this was demonstrated radiologically in one patient. If this were always the case, it is perhaps surprising that more dramatic symptoms are not evident as a rule. Endarteritis of pulmonary vessels, fibrosis and the formation of small cysts further contribute to respiratory and cardiac embarrassment, which may be accentuated by the rigid state of the thorax.

Seven patients (half the series) complained that food stuck at the bottom of their gullets, while ten complained of various dyspeptic symptoms including heartburn. R. Kemp Harper, who reviewed the radiological features of the condition, demonstrated changes in the oesophagus in all Cullinan's patients. These changes included anomalies of peristalsis in the early stages, complete loss of peristalsis, stricture formation and hiatus hernia. P. R. Allison commented that both radiological and histological findings were compatible with the later stages of reflux oesophagitis secondary to sliding hiatus hernia. W. A. Bourne also considered that functional rather than pathological abnormality might be the earliest demonstrable change, as typical sclerodermatous lesions are not necessarily found on examining a specimen.

Kemp Harper described other changes in the gastrointestinal tract, at least some of which appear to be functional, although he is inclined to attribute them to replacement of muscle by fibrous tissue. Duodenal ileus, diverticula in small and large bowel due to patchy disappearance of muscle, and diminution of motility in the small bowel were all observed. The last mentioned sometimes amounted to considerable delay and cases have occurred with the symptoms of obstruction. Kemp Harper's finding of pouches in the colon and occasionally changes similar to those of ulcerative colitis have not previously been emphasized as part of the disease process. In conformity with this concept, however, was the observation of a pale, dry, rigid wall to the rectum and colon in six out of ten patients examined by the sigmoidoscope. Two of these complained of diarrhoea, but Cullinan found constipation a commoner symptom.

One further radiological finding deserves mention as it is regarded as pathognomonic of the condition—widening of the periodontal spaces, due to thickening and fibrosis of the periodontal membranes, associated with preservation of the dense lamina dura line. In addition, the demonstration of calcinosis, absorption of the terminal phalanges, cardiac enlargement and pulmonary changes may be of help to the clinician on occasion.

Cullinan's only comment on treatment is that "many treatments from vitamins to cortisone" have been tried with perhaps temporary improvement but never with cure. Cortisone has been known to be of some benefit, but this has been less dramatic in its effect than in *polyarteritis nodosa* and, to judge by Cohen's conclusions, *lupus erythematosus*.

¹ *Lancet*, August 15, 1953.

² *Proc. Roy. Soc. Med.*, July, 1953.

³ Roxburgh, H. C. (1950), "Common Skin Diseases", Ninth Edition, London, page 452.

Abstracts from Medical Literature.

SURGERY.

Recurrence in Carcinoma of Colon.

W. H. COLE (*Arch. Surg.*, August, 1952) discusses lymphatic, haematogenous and intraluminal spread of carcinoma of the colon in relation to post-operative recurrence. He produces evidence that intraluminal spread is the greatest factor. In a series of 55 cases the recurrence rate at the suture line was 16%, although local implantation was possible in only 10%. He advises the use of tape ligatures around the bowel as early as possible in the operation and irrigation of the segments which are to be anastomosed.

Pancreato-Duodenectomy.

A. BRUNSCHWIG (*Ann. Surg.*, October, 1952) reports three cases of pancreatoduodenectomy for malignant disease with survival of the patient for a period longer than five years. They were cases of carcinoma of the head of the pancreas, carcinoma of the ampulla of Vater and carcinoma of the duodenum. In each there was total deprivation of external pancreatic secretion, and no special substitution therapy was given. There was alteration of bowel habit and stool consistency. The cases are reported to illustrate the view that the operation should be considered no longer as experimental, but as one which is able to afford the patient a chance of cure for malignant neoplasms arising in this area.

Subtotal Adrenalectomy for Cushing's Syndrome.

W. WALTERS (*Arch. Surg.*, February, 1953) reports on the results of subtotal adrenalectomy in 46 cases of Cushing's syndrome. It is recommended that the whole of one gland and 90% of the other be removed. Seven deaths occurred in this series of patients, but among the survivals the results were satisfactory. (In another series of more than 30 cases with hyperfunctioning tumours of the adrenal gland there was no post-operative death from adrenal cortex insufficiency or other causes.) In one of the 46 cases of Cushing's syndrome a recurrence of signs and symptoms took place, but when the remaining portion of the adrenal gland was removed the patient had an excellent remission, cortisone alone being required for replacement. In all patients with hyperfunctioning lesions of the adrenal cortex cortisone acetate in 200 milligramme doses given intramuscularly was commenced two days prior to operation lest there be an atrophic adrenal gland opposite the hyperfunctioning one.

Carcinoma of the Colon and Rectum.

S. W. ASCHERMAN (*Arch. Surg.*, February, 1953) has surveyed a series of 461 necropsy cases of carcinoma of the colon or rectum. In 29% the primary carcinoma was situated in the rectum and in 71% it was situated in the colon. The sex incidence of the rectal carcinoma was 70.5% males and 29.5% females, whereas the sex

incidence of the colonic carcinoma was 59.3% males and 40.7% females. The tendency to metastasize was the same with the colonic and rectal carcinoma, but lymph node metastases were present in 93% of the cases of annular constricting carcinomata (including all parts of the colon and rectum) as compared with 57% in the fungating lesions. Obstruction is said to damage the bowel and because of the oedema to make for increased lymphatic absorption of metastases. The duration of symptoms was longer in patients with a carcinoma of the left side of the colon than in those with one of the right side. Metastases occurred to the liver in 39% of the cases of carcinoma of the colon and in 36% of those of carcinoma of the rectum. In the 461 cases of carcinoma, 15 were associated with chronic ulcerative colitis, and in these 15 there were five multiple carcinomata of the large bowel. In another two of the 461 cases there were multiple carcinomata of the large bowel without associated chronic ulcerative colitis, and in another 14 there was an associated carcinoma of some other viscus.

Choledcho-Duodenal Fistula.

J. L. YON AND L. G. BELL (*Arch. Surg.*, February, 1953) discuss internal biliary fistulae, especially choledcho-duodenal fistulae. These result from chronic calculous cholecystitis, peptic ulcer, malignant growth of the gastro-intestinal tract or operative interference. Such fistulae may be demonstrated by retrograde filling of the biliary tree by barium during the course of gastro-intestinal X-ray examination. Similar filling of the biliary tree may rarely follow reflux from the duodenum through a patent sphincter of Oddi. A method is described of dealing with a choledcho-duodenal fistula following a peptic ulcer. During the performance of a partial gastrectomy the fistulous track is opened longitudinally into the duodenum, which allows closure of the duodenal stump.

Post-Gastrectomy Obstruction.

J. K. NARAT AND L. A. MANELLI (*Arch. Surg.*, February, 1953) discuss the causes of interference with the function of the stoma after gastroenterostomy or partial gastrectomy. They state that gastric retention may be due to factors affecting the proximal limb, such as kinking where the afferent loop joins the lesser curvature or at the duodeno-jejunal angle. If a long afferent loop fills, this may also obstruct the stoma. Secondly, it may be due to changes in the stoma, such as oedema due to hypoproteinaemia, or to a traumatic inflammatory gastro-jejunitis. The stoma may also be obstructed by the inversion of excessive amounts of tissue creating a constriction ring, by the formation of a spur at the anastomotic site by the festooning descent of long jejunal limbs, or by angulation of the retracted jejunum when the anastomosis herniates through an improperly fixed mesocolon. Thirdly, it may be due to factors affecting the efferent limb, such as twisting or kinking, or to over-inversion of the readily available jejunum. If the anastomosis is made to the right of the middle colic artery, this may cause obstruction. So also

may newly formed adhesions. In many cases, however, malfunctioning of the gastric stoma is due to several factors together.

Cancer as a Chronic Disease.

J. J. MORTON, JUNIOR, AND J. J. MORTON (*Ann. Surg.*, May, 1953) have summarized a series of cases which indicates that cancer may behave as a chronic disease. These cases cover a variety of cancers, showing that chronicity is not confined to any particular type. Some cases of cancer show apparently spontaneous disappearance either of the primary tumour or of the metastases, whereas others certainly progress more slowly than the average even if the cancer does not disappear. Other cancers show cycles of rapid growth alternating with stationary periods or actual remissions, and with others there is the phenomenon of delayed recurrence after periods of many years. Seventeen cases are reported of prolonged survival in the presence of metastases. In four cases the primary tumour was a malignant melanoma. In the other 13 it was a carcinoma of the thyroid gland (three cases), breast (three cases), salivary gland (two cases), kidney, ileum, peritoneum, pancreas and adrenal gland.

Preservation of the Splenic Artery in High Oesophago-Gastric Anastomosis.

G. L. EMERSON (*Surgery*, July, 1953) describes a patient who three years previously had undergone pancreatoduodenectomy for a carcinoma of the head of the pancreas and who then presented with a carcinoma of the mid-thoracic part of the oesophagus. At operation the lower two-thirds of the oesophagus were removed and an oesophago-gastric anastomosis was performed above the arch of the aorta. The right gastric artery could not be found, and the right gastro-epiploic artery had been tied. The proximal jejunal loops had only very short arterial arcades. After removal of the spleen by dividing the splenic pedicle right at the hilum, the splenic artery with its branch to the left gastro-epiploic artery was mobilized. When the left gastric artery was clamped, there remained good pulsation of the arcades on both curvatures of the stomach. It was, however, much stronger on the greater. At the time of this operation there was no evidence of recurrence of the carcinoma of the pancreas, but at post-mortem examination six months later extensive recurrence of the primary carcinoma of the pancreas was present. The possible stimulant effect of the second carcinoma on the first is mentioned.

Hermaphroditism.

KEITH L. MOORE, MARGARET A. GRAHAM AND MURRAY L. BARR (*Surg., Gynec. & Obst.*, June, 1953) consider that a case of hermaphroditism presents to the physician an exceedingly difficult problem; this problem appears to have reached an impasse, and a new approach is desirable. Painter, and also Evans and Swezy, have shown that, in humans, females have an XX chromosome combination, while males have XY chromosomes as sex chromosomes. The authors have found that the nature of the sex chromosomes (XX or XY)

in an individual may be detected by examining the epidermal nuclei in a small biopsy of skin. This technique offers a new approach to the vexatious problem of hermaphroditism. Tissues of the cat have been studied extensively. Nerve cell nuclei are most suitable for the work because they are large and vesicular. In nerve cell nuclei of the female cat there is, in addition to the large nucleolus, a chromatin mass about 1μ in diameter. A chromatin mass of similar size is seldom seen in nerve cell nuclei of male cats. Various investigators have studied the sex difference in nuclear morphology in many lower animals, and a preliminary general survey of human tissues indicates that the distinctive nuclear morphology, according to sex, is present in man. A systematic study of nuclei in human skin was made, because of the availability of this tissue as a biopsy in clinical medicine. The materials and method are given in some detail. Skin specimens from 50 females and 50 males of normal sex development were studied; in them was found a difference in nuclear structure, according to sex, in cells of the Malpighian layer of the epidermis. This method of detecting the chromosomal sex of an individual was applied to two cases of hermaphroditism. In one case the subject proved to be a chromosomal female and in the other a chromosomal male. The authors urge an extension of this study by other investigators in the hope of clarifying the complex problem of hermaphroditism. The potential importance of the skin biopsy technique lies in the possibility that it may prove to be, in cases of doubt, a simple method of detecting the dominant sex in infancy.

Tissue Reactions to Tantalum Gauze and Stainless Steel.

A. R. KOONTZ AND R. C. KIMBERLY (*Ann. Surg.*, June, 1953) compare the tissue reactions to tantalum gauze and to stainless steel gauze after their implantation into the rectus sheaths of dogs. It was found that the amount of fibrosis was greater around the tantalum gauze than around the stainless steel. Also, the stainless steel gauze was eventually more readily pulled away from the tissues than was the tantalum gauze. Infection occurred five times in the rectus sheath into which tantalum had been implanted and seven times in the rectus sheath containing the stainless steel. In dogs in which the wounds were deliberately contaminated there was no significant difference in the healing of the wounds containing the tantalum or the stainless steel.

Perforated Gastric and Duodenal Ulcers.

OLIVER H. BEAVERS, DOUGLAS K. DUNCAN AND LEWIS A. VADHEIM (*Surg., Gynec. & Obst.*, June, 1953) present a study of 114 cases in which surgical treatment was applied for acute, free perforation of ulcer of the stomach or duodenum at the Mayo Clinic during the decade preceding January 1, 1951. Comparison is made with the series presented by other authors, with particular reference to those of Seeley and of Heslop, in both of which the treatment was non-surgical. In the series presented here the site of perforation

was the stomach in seven cases, the pylorus in 10 cases and the duodenum in 97 cases. Procedures carried out were simple closure of defect in 99 cases, simple closure and removal of ovary in one case, simple closure and gastro-enterostomy in five cases and subtotal gastric resection in six cases. It is the authors' belief that simple closure of the perforation should be followed by the best rate of immediate recovery. Of the 114 patients, three died. The authors state that they cannot abandon their belief that surgical operation is the treatment of choice for perforated peptic ulcer. However, if there exists reasonable doubt about the diagnosis, treatment may be justifiably conservative, in view of the excellent results obtained by Seeley.

Survival Rates of Patients with Carcinoma of the Stomach.

W. WALTERS AND J. BERKSON (*Ann. Surg.*, June, 1953) compare the survival rates of patients with carcinoma of the stomach who attended the Mayo Clinic in the years 1907 to 1916 and in the years 1940 to 1949. Of all the patients with carcinoma of the stomach attending in the first of these two periods, 5% survived for five years; while in the second period, the five-year survival rate was 14%. In the years 1907 to 1916, 22% of the patients examined survived gastric resection; in the years 1940 to 1949, the immediate survival rate after gastric resection increased to 40%. The five-year survival rate after operation has increased from 29.2% in the first group to 34.8% in the second. The ten-year survival rate has increased from 21.7% to 26.7%. These increases are despite the inclusion in the second group of a larger percentage of elderly patients and of patients for whom a total gastrectomy was required. These improved results have followed improvements in diagnosis, in pre-operative and post-operative treatment, in operative technique and in anaesthetics, and also in increased surgical courage to deal with more extensive lesions than formerly.

Vagotomy with Gastro-Enterostomy and Gastrectomy.

L. W. EDWARDS AND J. L. HERRINGTON (*Ann. Surg.*, June, 1953) present a comparative study of their results in patients with duodenal ulcers after vagotomy, after vagotomy and gastro-enterostomy, and after vagotomy and conservative gastrectomy. They found that of 17 patients who underwent vagotomy alone, eight are free of symptoms, four have continued to experience occasional diarrhoea and epigastric fullness after meals, and five have had a poor result. Four in the last-mentioned group developed severe gastric atony. The authors state that when gastro-enterostomy is added to vagotomy, the results are superior to those obtained from vagotomy alone. Of 39 patients on whom vagotomy and posterior gastro-enterostomy were performed, 24 have obtained an excellent result, 11 have had some mild digestive disturbances (although all are satisfied with the result of the operation), and four have obtained poor results. Thirty-one patients underwent vagotomy and pylorotomy, and 25 of them have been relieved of all gastro-intestinal symp-

toms. Three still have mild symptoms, but the patients are satisfied, whereas in the other three cases the result has been poor. Vagotomy was coupled with antrectomy in 34 cases, and of the patients concerned 29 obtained entirely satisfactory results, two complained of transient fullness after meals, and three received no apparent benefit from surgery. From these results it is concluded that vagotomy combined either with pylorotomy or with antral resection may be worthy of a place in the surgical treatment of duodenal ulcer.

Fibrosis of the Sphincter of Oddi.

R. B. CATTELL AND B. P. COLOCOCK (*Ann. Surg.*, June, 1953) discuss the causes and treatment of obstructions of the lower end of the common bile duct. The causes are enumerated as common duct stone, stricture of the ampulla of Vater, saccular dilatation of the terminal common duct, devious course of the common duct through the pancreas, fibrosis of the sphincter of Oddi, pancreatitis, penetrating duodenal ulcer, papilloma of the ampulla of Vater and carcinoma of the periampullary region. The authors state that of these, fibrosis of the sphincter of Oddi is most likely to be overlooked as the primary operation for the relief of cholelithiasis unless broad indications for choledochostomy are used. At the Lahey Clinic slightly less than one-half of all patients submitted to operation for cholelithiasis have an exploration of the common bile duct, and approximately 20% of all patients are found to have stones in the common bile duct. In addition, an appreciable number of obstructions at the ampulla of Vater are found, even though many of them have not been suspected previously. If unrecognized at the time of cholecystectomy, fibrosis of the sphincter or stricture of the papilla may be responsible for recurrence or persistence of symptoms. Relief of such fibrosis may be attained by forcible dilatation or by transduodenal sphincterotomy. After these procedures it is necessary to insert a long T tube into the duodenum and to keep it in place for several months.

Massive Resection of the Liver.

J. K. QUATTLEBAUM (*Ann. Surg.*, June, 1953) reports a series of three cases in which massive resection of the liver was performed without a fatality for primary carcinoma of the liver, solitary metastatic carcinoma of the liver and massive haemangioma occupying the greater part of the right lobe. With a generous upper abdominal transverse incision, which was joined by an oblique thoraco-abdominal incision, the liver was completely exposed. The liver substance was incised with the handle of a scalpel; and haemostasis was obtained by ligation of the larger vessels and by the application of "Gelfoam". The latter was fixed in position with chromicized catgut sutures. Resection of solitary liver metastases is advised in selected cases, but the authors admit the difficulty of detecting metastases deep in the liver, and the impossibility of being certain that no other metastases are present. However, it is concluded that, if resection of the involved liver is possible, the patient is probably better off with this focus of malignant disease removed.

Special Articles for the Clinician.

(CONTRIBUTED BY REQUEST.)

XCI.

SURGICAL HELP IN THE TREATMENT OF PEPTIC ULCER.

It is unfortunate that in medical literature the term "peptic ulcer" is used in reference to ulcers varying in size from tiny erosions, on the one hand, to huge ulcers with complete loss of gastric mucosa on the other. Obviously, treatment which may result in the healing of a very small shallow ulcer is less likely to result in the healing of a huge deficiency in the gastric or duodenal wall.

Often, too, a sufficient distinction is not made between gastric and duodenal ulceration, which are probably quite different diseases with a common medical treatment. The age incidence, sex ratio, geographic incidence and tendency to carcinomatous change are all different.

Peptic ulceration can occur in the jejunum (usually after some form of anastomosis with the stomach) or in aberrant gastric mucosa in other parts of the small bowel, for example, in a Meckel's diverticulum. Post-operative jejunal ulceration of this sort may respond to medical measures, but further operation is usually necessary. Peptic ulceration further down the small bowel, however, usually manifests itself by bleeding or perforation often unheralded by any other symptoms and is purely a surgical problem.

It is necessary to remember, too, that there is, especially in the early stages, a periodicity with regard to symptoms; remissions are apt to give rise to false hopes in the minds of both patient and physician, whereas exacerbations may be wrongly attributed to some minor alteration of treatment.

All ulcers do not give rise to the usual symptoms. Some do not cause any symptoms until they manifest themselves by sudden perforation or severe hæmorrhage; some are found at autopsy after death from other causes, in people who have never had symptoms which could be attributed to such ulcers.

If the ulceration progresses, symptoms change as the years go by, so that those due to fibrosis gradually overshadow those which we regard as typical of "ulceration", until the whole picture changes and symptoms become due not so much to the presence of an ulcer as to the deformity caused by fibrosis.

Symptoms, especially of duodenal ulceration in its early stages, can be mimicked very closely by other conditions, notably duodenitis, subacute inflammation of the appendix, gall-bladder disease, carcinoma of the pancreas and gastritis (shown by gastric biopsy), as well as by variations in the motility and secretion of the stomach or by a lack of coordination of the muscular contraction of the stomach with relaxation of the pyloric sphincter.

It is, therefore, essential that a diagnosis should be established, with all the means at our disposal, as accurately as possible and as soon as possible if treatment is to be of its maximum use. Modern radiology is extremely helpful but not infallible. Unless a definite ulcer-crater can be demonstrated as a shadow, the radiological diagnosis must be presumptive only. Sometimes even a large flat ulcer will not give rise to such a shadow. The gastroscope may be very helpful in establishing or confirming the presence of gastric or anastomotic ulceration. Naturally, if the crater deepens, it becomes easier to demonstrate radiologically; and this is one reason why, if symptoms persist, repeated radiological examinations are necessary.

In what follows it is assumed that the diagnosis has been established with as much certainty as modern methods allow. It is wrong to persist with what may be very rigid and tiresome treatment if ulceration is not, in fact, present; and sometimes operation may be justified although no ulcer can be demonstrated radiologically.

Three so-called "complications"—perforation, stenosis and hæmorrhage—are always listed as requiring surgical treatment. Perforation and stenosis certainly demand urgent surgical intervention, but the precise stage at which surgical intervention is advisable for gross hæmorrhage is still, to some extent, a matter for debate. It constitutes one of the most difficult problems associated with the surgery of peptic ulcer and is therefore discussed separately, later in this article.

Perforation.

Obviously perforation into the peritoneal cavity calls for urgent surgical treatment. Some patients with perforated ulcers have never had symptoms suggestive of ulceration; perforation in these seems to be entirely due to increased pressure. The majority of patients with perforations into the peritoneal cavity, however, have recently had a marked increase in symptoms signifying a spread of the process through the wall of the stomach or duodenum. The mortality from perforation increases steadily as the time between its occurrence and suitable operative treatment elapses; for this reason perforation into the peritoneal cavity must be regarded, always, as an acute surgical emergency.

Stenosis.

Stenosis, usually due to gross fibrosis, can follow ulceration in both the duodenum and the stomach. When present in a marked degree it is probably commoner in the duodenum than in the stomach. This duodenal stenosis is almost universally called "pyloric stenosis". It must, if complete, result in starvation. In the same way, stenosis of the stomach giving rise to the so-called "hour-glass" stomach will, if gross, also cause starvation. The suddenness of onset, in many instances, seems to be due to oedema of the mucous membrane making an already narrowed opening practically impassable for food. Even if this is the case and the final closure is precipitated merely by oedema, the loss of fluid, proteins and electrolytes before the oedema subsides sufficiently to allow food to pass can result in an irreversible alteration of chemistry of the tissues which is fatal. For this reason, if stenosis occurs, surgical aid should be sought at once; a few days of starvation can render elderly patients (and those with stenosis are often elderly) very difficult to restore to health even with skilful surgery.

Other Reasons for Surgical Help.

If we omit, then, for the present the problem of bleeding and exclude patients suffering from perforation and stenosis (for whom there is no alternative to surgical help), there still remain many patients with gastric or duodenal ulceration who provide very difficult problems for the physician.

Even without adequate statistical proof it is reasonable to assume that the majority of patients with small ulcers can be kept comfortable and happy with reasonable limitations of diet and reasonable quantities of antacids. It is the minority which provides the problems.

Many small ulcers undoubtedly heal. Indeed, it is still not certain how great a part medical treatment, while controlling pain, plays in increasing the rate of healing, or whether medical treatment has any significant effect on future recurrences. It is probable that the disease has a natural history largely unaffected by treatment, although such treatment may control symptoms. Thus, some ulcers remain stationary and for long periods may produce few symptoms; when symptoms recur, they can perhaps be alleviated by a return to appropriate treatment. Some may heal but not remain healed, and the recrudescence symptoms perhaps prove difficult to relieve. But in some the process is steadily progressive despite treatment.

So it comes about that, as mentioned previously, this minority can include patients with ulcers in the stomach or duodenum varying in size from very small to very large ulcers.

If we bear in mind all these variations, it can at once be realized that it is wrong to attempt any over-simplification by decreeing that duodenal ulcers should be treated "medically" and gastric ulcers "surgically".

This article is not the place to trace the history of changing surgical opinion or the reasons for such changes. It is possible to say only that improvements in radiological technique have played a large part in the diagnosis of tiny ulcers and that unfortunate sequelae, many years ago, of operations were in a large measure due to ill-advised and ill-conceived surgery. But the tendency towards avoidance of surgery for duodenal ulcers in the more recent past was engendered by the knowledge that it is extremely rare for ulceration in the duodenum to become malignant, whereas it may be difficult or impossible for the radiologist and the gastroscopist to distinguish between a gastric ulcer and an early carcinoma. Moreover, the shape and position of the stomach and duodenum, and the high acidity of the gastric secretion in many patients with duodenal ulcers, have presented technical problems which were usually absent in patients with gastric ulcers. The results of surgical intervention in the past were thus more satisfactory for gastric than for duodenal ulcers.

The same problems exist, perhaps in a lesser degree, in the so-called "medical" treatment. The real cause for failure of such treatment in any patient is that we do not yet know why ulcers develop—some in the stomach, some in the duodenum. Because it is probable that such ulcers persist or recur because of the acid and pepsin of the fluid in which they are bathed, treatment directed to the reduction of this acidity is successful in allowing healing to take place in the majority of early cases.

If, however, despite such treatment, the ulcerative process progresses, surgical aid eventually becomes imperative.

It is true that gastric ulcers do, in rare instances, become carcinomatous. It is also true that some lesions diagnosed as gastric ulcers are, in reality, carcinomatous from the onset. Therefore, if serial radiological examinations reveal an increase in the size of a gastric ulcer or suggest that a malignant condition is present, surgical aid should be sought. The pain and vomiting associated so frequently with the ingestion of food in the presence of progressing gastric ulceration can result in so much loss of weight, due to slow starvation, that the observant physician soon realizes that in certain instances routine medical treatment is of no avail.

Similarly, with duodenal ulceration, serial radiological examinations may reveal an extension of the process with corresponding difficulty in control of symptoms despite rigid dietary and the use of copious antacids. Here again the physician will realize that the usually accepted treatment is not only failing to control symptoms but permitting the process to spread. For these patients surgical treatment is the only alternative.

Some patients have persistent and severe pain which is uncontrolled by orthodox medical treatment, although serial radiological examinations do not reveal any marked extension of the process. These patients should not be allowed to suffer, indefinitely, constant pain; properly directed surgery can help, once again.

There is, too, a small group of patients for whom rigid dietetic treatment and adequate antacids may control symptoms, but the patients' occupations are such that this treatment is not practical. If without such rigid treatment symptoms recur, recourse to surgical treatment becomes necessary.

Gross stenosis resulting in starvation has been dealt with, but our knowledge of the pathology of extension of the ulcerative process enables us to realize that deformity can gradually occur, especially if the ulcer is near the pylorus. The superior border of the duodenum may become adherent to the lesser curvature of the stomach; this cannot always be recognized by the radiologist. As stated above, symptoms then occur due perhaps not so much to the ulcer itself as to the deformity with its resultant interference with the passage of food, long before any gross "stenosis" can be demonstrated. This change of symptoms has been referred to already and, especially if accompanied by any radiological evidence of extension, calls for surgical intervention because the deformity will progress.

It is just as reprehensible to persist with orthodox "medical" treatment if symptoms are not relieved, if symptoms change to those due to deformity, or if radiological evidence demonstrates steady extension of the ulcerative process, as to advise surgical treatment merely because the radiologist reports the presence of a small ulcer. Some patients are quite unable to deal with the special type of food usually used in treatment, and the physician must realize that, even if the patient tolerates it well, persistence can become irksome and interfere with the patient's activities, including those which are income-producing. The exclusion of certain foods in a rigid dietary can have a deleterious effect on the patient's well-being if persisted in for long periods; often, too, for reasons known only to themselves, patients exclude other foods and thereby make matters worse. If, eventually, surgery must be resorted to for these patients, because the chemistry of their tissues is upset and because excessive deposits of fat may be present, such surgical treatment is rendered more hazardous. It is therefore necessary to temper "intensive medical treatment", which is not eminently successful, with discretion.

Any suggestion that the treatment of peptic ulcer is competitive between physicians and surgeons—or that one form of treatment is alternative to the other—is to be deprecated. Such an idea brings discredit on medicine generally and creates much confusion in the minds of students and young graduates. It is therefore necessary to repeat that the majority of patients with early ulceration of this nature can be dealt with successfully without surgical interference; it is just as necessary to repeat that, for the

reasons set out, surgical interference is essential for the remainder.

Medical treatment is not entirely without mortality; perforation and hæmorrhage can occur and may be fatal. Surgical treatment is not without mortality, although nowadays this is very low. All who survive operation are not completely "cured", but probably over 90% should be, and all can be rendered free from pain and should be fit to resume reasonably laborious occupations without gross restrictions of diet.

Summary.

In the majority of early cases of proven ulcer the patient can probably be treated satisfactorily by medical means.

Surgical aid, however, is not only advisable but actually necessary in the following circumstances: if pain cannot be controlled; if the process is obviously advancing; if deformity is occurring; if, in the stomach, doubt exists as to the benign nature of the lesion; if symptoms can be controlled only by a rigidity of diet and other treatment which is impossible of achievement because of the patient's occupation.

There is no need to elaborate further the necessity for urgent surgical intervention for perforation or gross stenosis, but stenosis is not a feature of "early" cases.

Hæmorrhage.

Lastly there remains the problem of hæmorrhage.

This can be present in all degrees from what might be described as a slight oozing from the granulation tissue forming the base of a small ulcer to overwhelming loss of blood which rapidly renders the patient moribund.

The very minor degrees are not recognizable, and orthodox medical treatment for the ulcer will put an end to such oozing if it results in healing.

Persistent loss of larger amounts of blood can be recognized by examination of the stools for "occult blood". A positive test result is common even when the blood picture is normal and the symptoms of the ulcer are controlled. For this reason, provided the physician, with the aid of radiological evidence, does not consider that the process is progressive and provided there is no evidence of malignant change, a cessation of bleeding may well be obtained once again by the usual medical measures. But attention must be drawn to the fact that even if the process is not obviously progressive, it may be stationary; and any increase in blood loss, as evidenced by reduction of hæmoglobin content, should lead the physician to doubt the efficacy of his treatment and to realize the possible occurrence in the near future of severe hæmorrhage, to avoid which surgical help is required.

These problems do not constitute abdominal emergencies. Overwhelming hæmorrhage, however, does, and it provides, as stated, a very difficult problem for all concerned.

In such cases blood may be vomited or passed in an altered condition as a typical dark stool; but the alarming symptoms and signs are those of gross internal hæmorrhage. Such hæmorrhage can occur from an ulcer which has not been suspected or diagnosed; unfortunately, it can also occur from rupture of dilated submucosal veins at the lower end of the œsophagus or lower in the alimentary canal. The problem of diagnosis of the source of the bleeding can then complicate the treatment. In what follows, however, the assumption is made that radiological or presumptive clinical evidence of peptic ulcer is available and that it is reasonable for the patient's medical advisers to conclude that the alarming bleeding originates in the floor of that ulcer.

When such a catastrophe happens, immediate help is needed from one skilled in resuscitation. The plan as regards surgery will be partly determined by the age of the patient, because the mortality without operative interference is low below the age of forty-five years, but then rises steeply, and in patients over sixty-five it is very high indeed. The problem is not necessarily simply the replacement of blood lost; it may be impossible to replace blood as rapidly as it is being lost or at best to keep pace with further loss. This rapidity of loss may conceivably be increased by elevation of the blood pressure brought about by transfusion. A very critical appreciation is therefore essential of whether, provided the patient is under constant observation in hospital, the bleeding should not be allowed to stop (if it will) by natural causes rather than be accelerated by transfusion. If it should cease, presumably by the formation of a clot at the site of bleeding, a delay in replacing blood or a very slow replacement may be

advisable so as to allow that clot to become firmer and adherent. If, however, estimation of blood pressure, haemoglobin value and blood volume indicate continuance of bleeding, only the transfusion of more blood quickly can be contemplated before any surgical treatment is instituted.

In the former instance, with a cessation of bleeding and ability to replace blood without causing further haemorrhage, operation should probably be undertaken as soon as the patient's haemoglobin content and red-cell count are satisfactory. But the temptation to delay embarking upon a major surgical procedure in the hope that within a few days the patient's condition will be even better can easily be understood. If further bleeding occurs in this interval, and it frequently does, the medical attendants are back where they started, and valuable time has been lost in dealing with a partially starved patient with anoxic organs.

In the latter instance, where difficulty is experienced in replacing the blood as fast as it is lost, or if it is only possible just to keep pace with the loss, the same hesitancy, imbued by the hope that the haemoglobin content will eventually be improved, may again result in loss of valuable time.

For these reasons the decision when an operative attempt to control the bleeding should be made must be left entirely to the discretion of the surgeon. This operative procedure is seldom a simple ligation of vessels; partial gastrectomy is usually necessary. The whole problem is therefore very complex, and even today opinions differ on the most suitable time for the surgeon to act if bleeding persists; the precise time of surgical intervention may be the determining factor between success and failure.

HENRY SEARBY,
Melbourne.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on June 18, 1953, at the Royal Alexandra Hospital for Children, Sydney. The meeting took the form of a series of clinical demonstrations by the members of the honorary medical staff of the hospital.

Aplastic Anaemia Possibly due to Chloramphenicol.

Dr. W. P. MACCALLUM showed a female child, aged eleven years, who had been admitted to hospital on January 17, 1953, with the diagnosis of pyrexia of unknown origin. She had had a cold for about one week, which had become worse, and pneumonia was finally diagnosed. She was given penicillin, and later "Chloromycetin" as she failed to respond to penicillin. She was given about 32 capsules (each of 250 milligrammes) of "Chloromycetin" over eight days. A course of "Estopen" and later streptomycin was also given, but the fever failed to respond.

On examination of the patient, except for pallor and râles at the bases of both lungs, no abnormality was detected. She was afebrile. An X-ray examination of the chest revealed collapse of the lower lobe of the left lung and some associated consolidation; pleural changes were also present at the base of the left lung. No cold agglutinins were detected. The blood sedimentation rate was 115 millimetres in one hour. An attempt at culture of microorganisms from the blood was unsuccessful. No malarial parasites were detected, and agglutination tests for typhoid organisms and *Brucella abortus* gave negative results. The Mantoux test failed to produce a reaction. A full blood count gave the following results: the erythrocytes numbered 2,600,000 per cubic millimetre, 1% being reticulocytes, the haemoglobin value was eight grammes per centum, and the colour index was 1.03; the leucocytes numbered 2500 per cubic millimetre, 52% being neutrophile cells, 46% lymphocytes and 2% monocytes; the number of thrombocytes was normal.

Massive doses of penicillin were given with aureomycin. No fluid was obtained on aspiration of the chest. While she was in hospital the child developed a high fever and looked very ill. A grade II apical systolic murmur developed, and rhonchi were heard over the chest with signs of consolidation at the base of the left lung. On January 24, after five days of treatment, she felt and looked much better, and the dosage of penicillin was reduced to 1,000,000 units every six hours. As a result of the leucopenia a number of skin infections developed. She was given blood transfusions, but the needle

sites became infected. Examination of the bone marrow was delayed owing to the risk of osteomyelitis, but was finally made; it showed a relative and probably an absolute decrease in the number of granulocytes. This was thought to be merely a passing phase in bone marrow regeneration. Subsequent blood counts revealed an improvement in the blood picture, and at a final count on April 2 the erythrocytes numbered 3,230,000 per cubic millimetre, 6% being reticulocytes; the haemoglobin value was 11 grammes per centum; the leucocytes numbered 4000 per cubic millimetre, 33% being neutrophile cells, 63% lymphocytes and 2% monocytes; thrombocytes numbered 200,000 per cubic millimetre; the neutrophile cells showed a slight "shift to the left". On her discharge from hospital the patient was afebrile and felt well.

Cavernous Sinus Thrombosis.

Dr. MacCallum then showed a girl, aged six years, who had been admitted to hospital on December 18, 1952. She had had a cold two weeks previously, and had suffered from pain in the neck for five days; a purulent discharge from the left ear had been present for five days, and swelling of the face, which had commenced on the left side and spread to the right, had been present for two days. Her face had become progressively more swollen, so that her vision was impaired. Although she was eating an adequate amount she had been vomiting for a few days, and she had a high fever.

On examination of the patient, her temperature was 102.8° F., and she had bilateral facial swelling with orbital oedema and proptosis. She appeared very ill and was delirious. She had a discharge from the left eye, and a tender cord was felt running down the left side of the neck, which was thought to be the internal jugular vein. In addition slight oedema of the left hand and wrist was present. Examination of the ocular fundi revealed early change due to papilloedema, and both ear drums were slightly infected. A lumbar puncture was carried out on December 18; the cerebro-spinal fluid was under a pressure of 130 millimetres of fluid, and the Queckenstedt test produced a positive response; the fluid contained 2000 leucocytes per cubic millimetre, 90% being polymorphonuclear cells and 10% mononuclear cells; the protein and chloride contents were respectively 50 and 620 milligrammes per centum; sugar was present; no microorganisms were seen in a smear, and attempted culture produced no growth of microorganisms. At a further lumbar puncture on December 24, the cerebro-spinal fluid was found to contain 130 leucocytes per cubic millimetre, 50% being polymorphonuclear cells and 50% mononuclear cells; the protein and chloride contents were respectively 80 and 690 milligrammes per centum, and glucose was present. X-ray examination revealed no abnormality in the skull and mastoids, and some mucosal thickening in the left antrum, while the remaining anterior sinuses appeared normal. In the chest foci of calcification were present at both hilar regions; numerous irregular shadows fairly uniform in size were scattered throughout both lungs. The margins of the shadows were mostly ill-defined, and their density was faint. The appearances suggested a blood-borne lesion, such as pyæmia or miliary tuberculosis. An attempt at blood culture on December 19 was unsuccessful. On December 20 a blood count gave the following information: the erythrocytes numbered 4,120,000 per cubic millimetre and the haemoglobin value was 11.5 grammes per centum; the leucocytes numbered 29,500 per cubic millimetre, 19,175 being neutrophile cells, 8555 lymphocytes, 1180 monocytes and 590 eosinophile cells (all per cubic millimetre); the leucocytes showed a pronounced "shift to the left". Material from swabs taken from the left eye and the larynx yielded a *Staphylococcus aureus* which was coagulase-positive and sensitive to all antibiotics.

The patient was treated with sulphadiazine, penicillin, "Chloromycetin", aureomycin and streptomycin; "Albucid" drops were instilled into her eyes, and heparin was administered. She remained very ill (semi-stuporose) for four days, and her temperature fell to normal by the twelfth day. Bilateral external rectus palsy remained for some time, but other eye movements were good. On her discharge from hospital, the only abnormality was right-sided external rectus palsy.

Two weeks after her discharge from hospital the patient was readmitted, complaining of pains in the neck present for two days, and of anorexia and drowsiness of one day's duration. Swelling of the right eyelid was present, and she had been feverish. Her temperature was 99° F., and she appeared well. Right external rectus palsy was still present. Her neck was not stiff. Her right upper eyelid was swollen, and mild tenderness on pressure was elicited over the left internal jugular vein. Penicillin was administered. The

blood sedimentation rates on three occasions at intervals of six days (Westergren) were 42, 22 and 17 millimetres respectively. The patient was discharged from hospital, well, with instructions to report for further treatment of her right eye.

Pulmonary Tuberculosis.

DR. S. E. L. STENING showed a female patient, aged three years, who had been admitted to hospital on August 23, 1952, with pertussis following an attack of "unresolved pneumonia". The Mantoux test produced a positive reaction and she was regarded as suffering from pulmonary tuberculosis. In hospital she developed varicella, and was transferred to Prince Henry Hospital. When she was readmitted to the Royal Alexandra Hospital for Children on October 13, she had lost much weight and showed clinical and X-ray evidence of pulmonary collapse. A course of streptomycin, PAS and isonicotinic acid was given, and a bronchoscopic examination was made and subsequently repeated. On her discharge from hospital on May 1, 1953, her lungs were normally expanded.

A number of investigations were carried out during the patient's stay in hospital. A blood count on her admission to hospital gave the following information: the erythrocytes numbered 4,000,000 per cubic millimetre, the haemoglobin value was 10.5 grammes per centum and the colour index was 0.87; the leucocytes numbered 17,300 per cubic millimetre, 57% being neutrophile cells, 32% lymphocytes, 13% monocytes, 1% eosinophile cells and 2% basophile cells. On her discharge from hospital, the haemoglobin value was 13.9 grammes per centum; of the leucocytes, 52% were neutrophile cells, 35% were lymphocytes, 3% were monocytes, 9% were eosinophile cells and 1% were basophile cells. The blood sedimentation rate ranged between 12 and eight millimetres in one hour (micro method). On September 10 the sputum, gastric contents, urine and cerebro-spinal fluid were examined for acid-fast bacilli, but none were found; the biochemical findings in the cerebro-spinal fluid were normal. X-ray examinations of the lungs were carried out on a number of occasions. On the patient's admission to hospital the middle lobe of the right lung was seen to be deflated, but by October 13 the lung fields were within normal limits. Later the left lung became affected, and on February 11, 1953, partial collapse of the left lung with mediastinal deviation to the homolateral side was seen; by April 2 the lung fields were practically clear, and there was only a small amount of residual congestion at the extreme base of the left lung. On April 17, apart from a small focus of consolidation at the base of the left lung, the lung fields were normal. Bronchoscopic examinations were made on three occasions. On February 5, 1953, an inflamed constricted area was seen in the left main bronchus above the level of the upper lobe, with yellow-white material in the centre. It was thought that the material might be eroded cartilage or a foreign body. On March 10 the constricted area was still seen in the left main bronchus. A large piece of caseous material was aspirated from below the stricture, and air entry was then greatly improved. Microscopic examination of the caseous material failed to reveal any acid-fast bacilli. The patient's weight on her admission to hospital was 31 pounds; it subsequently fell, but on her discharge from hospital it was 32.5 pounds. She was to have one month's bed rest.

Dr. Stening's next patient was a boy, aged three years, who in June, 1952, had suffered from an illness diagnosed as pneumonia complicating measles, which had not responded well to antibiotics. An X-ray examination of his chest on August 6 revealed enlarged right hilar glands and infiltration through the upper lobe of the right lung. The Mantoux test produced a positive result. He was treated by bed rest at home. On September 8 he became drowsy and irritable and vomited on several occasions, and four days later he was admitted to hospital.

On examination of the patient, he was of good colour and nutrition and fully conscious. His temperature was 98° F., and no abnormality was detected in the central nervous system or the respiratory system; his fundi were normal. A papular rash was present on the trunk and limbs; it had been present for three months. At lumbar puncture the cerebro-spinal fluid was under a pressure of 300 millimetres; it contained 300 cells (all monocytes) per cubic millimetre; the protein, chloride and glucose contents were respectively 60, 680 and 30 milligrammes per centum. A provisional diagnosis of tuberculous meningitis was made. The patient was treated with streptomycin (given intrathecally and intramuscularly), PAS, isonicotinic acid and phenobarbital.

A number of investigations were carried out. On September 13, 16 and 17, culture of material obtained by gastric lavage

yielded a growth of acid-fast bacilli; none were detected in the stool. Dermal miliary tubercles were found in a biopsy specimen of skin. A blood count on September 12 gave the following information: the haemoglobin value was 12.6 grammes per centum; the leucocytes numbered 8200 per cubic millimetre, 5490 being neutrophile cells, 1640 lymphocytes, 492 monocytes, 492 eosinophile cells and eight basophile cells (all per cubic millimetre). The minimal findings on a blood count were as follows: the haemoglobin value was 10.5 grammes per centum; the leucocytes numbered 4300 per cubic millimetre, 1419 being neutrophile cells, 2709 lymphocytes, 86 monocytes, and 86 eosinophile cells (all per cubic millimetre); no basophile cells were seen. On May 4 a blood count gave the following information: the haemoglobin value was 13.6 grammes per centum; the leucocytes numbered 12,000 per cubic millimetre, 6000 being neutrophile cells, 5040 lymphocytes, 360 monocytes and 360 eosinophile cells (all per cubic millimetre); no basophile cells were seen. The blood sedimentation rate, estimated by the micro method, was 19 millimetres in one hour on September 12 and four millimetres in one hour on May 2. X-ray examinations of the chest revealed a persistent lesion in the upper lobe of the right lung. After the child's admission to hospital the lesion progressed, and at one stage a cavity was suspected to be present; however, tomography gave negative findings. The lesion had regressed in recent months, and on May 8, 1953, it was reported that there was some improvement, but that some consolidation was still present in the upper lobe of the right lung.

Dr. Stening said that the child's progress had been consistently good, and there were no apparent complications. On several occasions the fundi had been found to be normal. The child had had some hoarseness at one stage, but a laryngoscopic examination revealed no cause, and it cleared spontaneously. Since the patient's admission to hospital the mother had developed pulmonary tuberculosis.

Dr. Stening finally showed a girl, who had been admitted to hospital on October 21, 1952, with the diagnosis of pulmonary tuberculosis. In June, 1952, she had been treated at a suburban hospital for pneumonia with a two weeks' course of sulphonamides and penicillin; a cough persisted after her discharge from hospital. She had next been treated at Sydney Hospital in July, 1952, for unresolved pneumonia and collapse of the middle lobe of the right lung. Since her discharge from Sydney Hospital the cough had persisted, and she had had intermittent pyrexia and had been "vomiting sputum".

On examination of the patient, diminished air entry was detected at the base of the right lung, and bilateral high-pitched râles were heard. The Mantoux test produced a positive result, and a diagnosis of pulmonary tuberculosis was made. Clinical and X-ray evidence suggested pulmonary collapse, and a bronchoscopic examination was carried out; this revealed caseous material in the right main bronchus, which could not be entirely removed. Tubercle bacilli were found in a biopsy specimen, and the occurrence of intra-bronchial rupture of a tuberculous gland was assumed. A three months' course of treatment with streptomycin and PAS was given.

A number of investigations were carried out. The blood sedimentation rates, estimated by the micro method, on October 21, 1952, and March 4, 1953, were 21 and 14 millimetres in one hour respectively. A full blood count on October 21, 1952, gave the following information: the erythrocytes numbered 3,800,000 per cubic millimetre, the haemoglobin value was 11.9 grammes per centum and the colour index was 1.04; the leucocytes numbered 20,000 per cubic millimetre, 15,600 being neutrophile cells, 3800 lymphocytes, 400 monocytes and 200 basophile cells (all per cubic millimetre). On February 2, 1953, the haemoglobin value was 12.0 grammes per centum; the leucocytes numbered 18,000 per cubic millimetre, 10,000 being neutrophile cells, 6120 lymphocytes, 900 monocytes and 180 basophile cells (all per cubic millimetre). By March 1 the haemoglobin value had risen to 13.5 grammes per centum. No tubercle bacilli were ever detected in laryngeal swabbings or in material obtained by gastric lavage. A number of X-ray examinations of the patient's chest were made. On October 21, 1952, extensive consolidation of the lower lobe of the right lung was present, with probably a large element of collapse; some pleural thickening was present at the base, but little fluid, if any. The mediastinum was displaced to the right. There was no evidence of a foreign body. Some degree of resolution occurred, and at one time the appearances were suggestive of a foreign body. By February 2, 1953, there still appeared to be some collapse of the base of the middle lobe of the right lung, and by March 3 no significant change was detected.

Dr. Stening said that almost certainly the patient would develop post-stenotic bronchiectasis of the middle lobe of the right lung. She had been discharged to prolonged bed rest at home. Her weight on her admission to hospital was 19.5 pounds and on her discharge 26.75 pounds.

(To be continued.)

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

A QUESTION OF FEES.¹

Colonial Secretary's Office,
31 October, 1844.

The Deputy Inspector General of Hospitals.
Sir,

With reference to a charge amounting to twelve pounds twelve shillings made by Dr. Machatty for visiting Lachlan 70 miles from Bathurst and setting a compound fracture included in the unfixed Contingent Abstract of the Mounted Police Corps for the Quarter ended 30th Sepr. last I do myself the honour to request your opinion as to the reasonableness of the same.

I have, etc.,
W. ELYARD, JNR.

Correspondence.

A COLLEGE OF GENERAL PRACTITIONERS.

SIR: There appears to be a lack of understanding by certain members of our profession of the reason for the projected foundation of regional faculties of the College of General Practitioners in Australia. These members appear to think it unnecessary because, they say, the status of the general practitioner is much higher than it is in England. It is, however, the academic status, not the social status, of the Australian general practitioner that we have to maintain. The primary function of a College of General Practitioners should be training and post-graduate education for general practice.

Medical students in Australia are, to all intents and purposes, being taught entirely by specialists. This gives them an inevitable bias towards specialism. On graduation those of superior, as well as many of average ability, are being increasingly attracted to specialism because of the greater opportunities they believe specialism offers for superior ability and initiative. In the words of the General Practitioner Steering Committee (1952): "Many students who would be happiest in general practice, and be a powerful influence in raising its standards, deliberately avoid it, being unaware of the opportunities for good and satisfying work it offers."

This applies equally in Australia, and it must be changed if Australian general practitioners are to retain the high standard they have always held. The presence of a College of General Practitioners could effect such a change. It could help graduates to realize that general practice, no less than the specialties, offered scope for ability and initiative. Those who intended to be general practitioners could go to the College for advice from men who were primarily interested in general practice and its problems; they could receive help and encouragement in undertaking research in general practice (an enormous field if properly used); and they could have their post-graduate training worked out by men who were senior general practitioners and who knew what sort of training was necessary for general practice.

The British Medical Association has always been, and I hope it will always continue to be, the champion of the general practitioner. But the actual working out of the syllabus of training for the general practitioner is more properly the function of a College of General Practitioners in conjunction with the medical schools.

¹ From the original in the Mitchell Library, Sydney.

I recollect that when the foundation of the College of Obstetricians and Gynaecologists was projected there was the same opposition that the suggested College of General Practitioners is meeting with now. There was no need for such a college, it was said. The existing Colleges of Physicians and Surgeons were all that were necessary. But the new College was gone ahead with, and, I think, it is agreed that it now fulfils a useful function in training practitioners in obstetrics and gynaecology.

It may be argued that there is a difference in that the Royal College of Obstetricians and Gynaecologists offers a higher diploma. At present, at any rate, the College of General Practitioners does not wish to institute such a diploma. I believe, however, that the plethora of diplomas offered by the British colleges and universities has little to commend it. It is the acquiring of special skills that matters, not the acquiring of diplomas, which may often depend on theoretical rather than practical ability. The Americans recognize this, and not only do they not have a special diploma in their Academy of General Practice, but they refuse to offer a multiplicity of special diplomas for each and every branch of medicine.

The chief danger, as I see it, is that such a college could be dominated by place-seekers, motivated by self-interest. This, however, applies to all such colleges and associations and, to prevent it, it behoves the good general practitioners to get behind such a College of General Practitioners and give it their loyal support. And let us remember that the health service of any nation is just as good as the quality of the service of its general practitioners.

Yours, etc.,

H. S. PATTERSON,
Chairman, General Practitioner
Group of Queensland (British
Medical Association).

Ipswich,
Queensland,
November 16, 1953.

BIOGRAPHY OF SIGMUND FREUD.

SIR: Yesterday I received an air letter from Dr. Ernest Jones, Past President of the British Psycho-Analytical Society, who is, I believe, writing a biography of Sigmund Freud. Dr. Jones writes: "In a letter of Freud's he refers to someone writing to him from Sydney in 1909 saying that he had founded a Freud Group there. Could you trace this and give me any information about it?"

I should be grateful if you would publish this letter in the journal in the hope of obtaining the required information, so that I may forward it as promptly as possible.

Yours, etc.,

ROY WINN,
Chairman, Sydney Institute for
Psycho-Analysis.

143 Macquarie Street,
Sydney,
November 13, 1953.

SERUM PROTEIN LEVELS IN NORMAL NON-PREGNANT AND PREGNANT WOMEN.

SIR: I refer to the article by Miss B. Liddelow entitled "Serum Protein Levels in Normal Non-Pregnant and Pregnant Women", appearing in the journal of August 29, 1953. This article quotes a lower limit of normal for total serum protein of 4.97 grammes per 100 mls. I find this very difficult to accept.

In our present state of knowledge, a normal pregnant woman can be assessed as such only after she has had her baby. I would go further and define a normal pregnant woman as one who without symptoms of ill-health is able to produce a full-time normal child and feed it for six months. I do not believe that these criteria have been applied in Miss Liddelow's series, and what in fact has been described is the change in total protein occurring through pregnancy in women who at the time the blood is taken appear in good health.

If I am right, this is a very important difference and its lack of recognition leads to the dangerous acceptance of laboratory results not only in protein estimations, but also in such determinations as haemoglobin and blood volume. I believe that it explains the wide variability found in papers on these subjects and has led to conclusions which are potentially harmful to both mother and child. It will be seen that my main criticism of the paper is the inclusion

of the word "normal" in the title, and I would like to stress that not only should as much care be taken in the selection of normals as in the preparation of the biochemical data, but also that the means of selection should be as adequately described.

In conclusion, it is recognized that a great deal of careful work has been done for this paper, and it would make it a very valuable contribution if the records of the cases could be followed up and those women who did not produce a full-time normal child were excluded.

Yours, etc.,

Lister House,
61 Collins Street,
Melbourne.
November 7, 1953.

J. H. BOLTON, M.D., M.R.C.P.

NEUROSIS IN GENERAL PRACTICE.

SIR: May I, through you, congratulate Dr. H. Owen Chapman on his recent instructive article "Neurosis in General Practice"? This carries two messages. The first of these is that research may be carried on away from universities and public hospitals; and the second that patients of the type he describes may receive considerable help if this is made available for them. That the help is not more generally available appears due on the one hand to the fact that for various reasons not every practitioner has the aptitude, the interest or the desire to enter into the patients' whole illness, and on the other to the lack of adequate instruction in the handling of such patients during the medical course. Dr. Chapman's field work has shown what can be done, and further reports from Bathurst will be anticipated with pleasure.

Yours, etc.,

14 Parliament Place,
Melbourne, C.2,
November 9, 1953.

BRUCE ROBINSON.

NEUROMYELITIS OPTICA TREATED WITH CORTISONE: REPORT OF A CASE.

SIR: I have read Dr. Hertzberg's case report of *neuromyelitis optica* treated with cortisone (M. J. AUSTRALIA, November 14, 1953). May I be allowed to be somewhat critical?

The favourable outcome in this case may probably mean that the patient recovered despite the treatment given. Most practitioners who are concerned with the treatment of such cases have had patients with similar good recovery before cortisone became available, and who had either received placebo or treatment later shown to be of no value. A collection of case reports may eventually be helpful in assessing treatment, but when three different types of potent drug are given concurrently (namely, vitamin B complex, penicillin and cortisone) analysis becomes unsatisfactory.

In the preliminary discussion Dr. Hertzberg declares that there is no specific treatment, so I fail to see why he inflicted the injections of 30,000,000 units of penicillin upon his patient without giving any references to the benefits of such penicillin therapy in demyelinating diseases. If he wished to try to determine whether cortisone is helpful in such cases, should he not have had the courage of his convictions and used it alone? I agree with him that the use of cortisone (or any new potentially suitable therapeutic agent) is justified, but the pathology of these processes can indicate what is not likely to be of use, and patients should not have to bear heavy chemical assaults via hypodermic needles unless there is a fair prospect of help.

Yours, etc.,

82 Collins Street,
Melbourne, C.1,
Undated.

RONALD LOWE.

DIFFUSE CARCINOMA OF THE BREAST.

SIR: On reading Dr. Yeates's account of his patient with advanced acute diffuse carcinoma of the breast and extensive axillary involvement, with veil drawn mercifully over the ending, I felt like stout Susman, when a new treatment for precociousness swam into his ken. As an alternative to the multiple operation method of diagnosis and treatment, which

Dr. Yeates threatens to make even more massive, may I suggest that (i) the diagnosis be made clinically, (ii) the appropriate hormone be given in adequate doses, (iii) radiotherapy be added in subcaustic doses, so that it does not itself become a superadded disability with burnt chest wall and partially crippled arm. Thus treated, the patient will be preserved longer to her family, and she will live out the remainder of her life in less discomfort. The ineffectiveness of radical mastectomy in these cases has been well established, although unknown to the lonely authority quoted by Yeates. The only operation which may still be *sub judice* is the relatively minor one, bilateral oophorectomy. Unlike Dr. Susman, I would commend the Editor in bringing to light these case reports, and the writers for writing them. Not forgetting the Medical Superintendent for granting permission to publish! Too often such surgery blushes unseen, uncriticized and unchecked.

Yours, etc.,

235 Macquarie Street,
Sydney,
November 2, 1953.

V. J. KINSELLA.

JOHN ADEY FUND.

SIR: Will you allow me to express my appreciation and tender my thanks to all medical practitioners who have so generously contributed to a fund for the establishment of a prize for an essay on a subject connected with psychiatry? I hope the result of their contributions will be to increase the interest of medical students and young graduates in all branches of psychiatry, and that it will bring this still neglected branch of medicine more prominently before the profession.

Yours, etc.,

78 The Avenue,
Parkville,
Victoria.
November 18, 1953.

JOHN K. ADEY.

MISCARRIAGE.

SIR: The treatment of some aspects of miscarriage has always been controversial, and I would like to present some views which differ somewhat from those expressed by W. F. Joynt in his "Special Article for the Clinician" (M. J. AUSTRALIA, October 24, 1953).

Under the heading "Threatened Miscarriage" he advises the administration of progesterone five milligrammes twice daily intramuscularly and stilboestrol one milligramme daily by mouth in addition to sedation. I feel that as such a large proportion of spontaneous miscarriages are due to an abnormal ovum, there is little point in giving hormones, particularly in such small doses. I think that the majority of threatened miscarriages that are recoverable will settle down with rest in bed and mild sedation, and those that recover with hormone administration would have recovered anyway. Those that are going to miscarry due to an abnormality of the ovum will miscarry, no matter what is done for them, and in these, hormones are a waste of time. We have no means of diagnosing between these two groups, and for that reason I prefer not to use hormones. Furthermore it has been my impression that progesterone administered to the borderline case of threatened abortion often hastens the process of emptying the uterus. With habitual miscarriage, however, where there is no local or general cause (and there seldom is), we are forced to fall back on hormone therapy, even though it be somewhat empirical. We have no accurate laboratory means of telling which patient is short of oestrogen or progesterone, or in what ratio or proportion hormones are required.

Dr. Joynt advises progesterone 10 milligrammes once a week and stilboestrol one milligramme daily. I think that these doses are much too small, and that it is unwise to give progesterone in such intermittent doses. It is much better given by implantation of pellets (200 milligrammes), but even then it is not uncommon to have a patient miscarry within a short time of placing the implant, so that it is not a panacea for all cases of habitual abortion. I think a minimum starting dose of stilboestrol should be 20 milligrammes a day in divided doses, and that this should be increased by 10 milligrammes a day every month up to at least the thirty-second week.

Dr. Joynt also does not mention the administration of small doses of thyroid to these patients (half to one milli-

gramme three times a day)—again empirical in most cases, but undoubtedly beneficial to some and harmless to the rest.

Further, I would cavil with his use of the blunt flushing curette; this should have gone out of fashion, as, even with low pressure, some fluid must escape into the peritoneal cavity via the Fallopian tubes.

In case I should sound too critical, I would like to congratulate him on what was otherwise a well-presented and able summary of a rather difficult subject.

Yours, etc.,

R. M. MACKINTOSH.

230 North Terrace,
Adelaide,
November 13, 1953.

LITERATURE AND SAMPLES FROM DRUG FIRMS.

SIR: It appears that the time has arrived whereby our profession should be given some relief from the flood of useless literature from numerous drug firms eulogizing their particular preparations of well-known drugs. One firm regularly sends my wife and myself no less than six separate copies of their pamphlets and literature, which we immediately throw in the waste paper basket.

We have all been trained in pharmacy, pharmacology and therapeutics, and are capable of reading the medical journals and ethical literature to find and evaluate any new drug or preparation, and then prescribe it by its official title.

Another practice which should be stopped immediately is the sending through the post of various unsolicited samples. Today our small boy, aged three, went out to the letter box and brought in no less than eight packets of samples—labelled poison, and containing a total of 64 tablets, each of which had amongst its ingredients a potent poison—in short, enough to annihilate the neighbourhood of small boys!

As a corollary, the conclusion to be drawn is that various firms must be making excessive profits if they can afford to send such large amounts of literature and samples, which fill up odd boxes and corners in every medical practitioner's surgery, most of which lie there until the wife or nurse spring-cleans and disposes of it all—but, unfortunately, the time is only too short before the cupboards are once more bulging, and the clean-up has to be repeated.

No objection is taken to the firms who send occasional cards to be filled in by us for any sample we may require; they pay the courtesy of allowing us to select what we need or would be interested in. Also we know what is likely to arrive in the post, and can protect our children accordingly.

Yours, etc.,

R. H. O. DONALD.

167 Collins Street,
Melbourne, C.1,
November 12, 1953.

CORNEAL ULCER.

SIR: I read with interest the essay of Dr. D'Ombrian's on corneal ulcer. I think that he has under-estimated the danger of atropine in the treatment as I have seen glaucoma ensue several times, with subsequent loss of vision.

Yours, etc.,

F. W. SIMPSON, D.O. (Oxon.).

105 St. George's Terrace,
Perth,
November 11, 1953.

TREATMENT OF SUBARACHNOID HÆMORRHAGE.

SIR: I was pleased to read Mr. Stuart Morson's letter in your number of October 24 advocating a direct intracranial attack upon cerebral aneurysms. Since my paper on subarachnoid hemorrhage was prepared, I have had occasion to use this approach several times and fully agree that controlled hypotension makes the exposure of an aneurysm and its connexions a far easier procedure than formerly, when dissection in the presence of a higher blood pressure not infrequently became hazardous. Without hypotension, I was never prepared to undertake a direct attack unless angiography gave indisputable evidence that the sac was most favourably situated, but with the hypotensive anæsthetic techniques now available, many more sacs have come within surgical range.

I am still, however, attacking directly only those aneurysms lying at, or distal to, the terminal bifurcation of the internal carotid artery. Those lying on the undivided carotid can be satisfactorily dealt with, in the vast majority of instances, by the simpler procedure of ligation in the neck; but if, following this, one should feel dissatisfied with its effect, a direct attack may still be advised as a second stage. Such dissatisfaction is appropriate when pain or headache persists after ligation, or a paralysed cranial nerve fails to recover any function after several weeks, but it is most uncommon for these events to occur except in those cases having an arterio-venous communication between carotid artery and cavernous sinus.

Yours, etc.,

J. L. DOWLING.

149 Macquarie Street,
Sydney,
November 13, 1953.

Obituary.

HUGH SYLVESTER McLELLAND.

HUGH SYLVESTER McLELLAND was born at Lismore in the Northern Rivers District of New South Wales in 1889. His father was an inspector of schools who later became Chief Inspector for New South Wales. His mother was very musical and an amateur artist of considerable merit. One may surmise that it was from her that McLelland derived his own love for paintings and for beautiful things.

His boyhood was spent in New South Wales. He passed the intermediate examination from the East Maitland High School; and then, from the Sydney Grammar School (where he was awarded the Wigram Allen Prize for Latin Prose and the Senior Knox Prize), he obtained a brilliant pass in the leaving certificate examination, including two State medals. At the University of Sydney he was always well forward in his years and graduated M.B., Ch.M. with honours in 1913.

There was just time to hold a resident post at the Prince Alfred Hospital before German troops invaded Belgian soil. McLelland, never a shirker, enlisted in 1914 at the outbreak of hostilities and saw nine months of service with the Royal Australian Navy, after which he returned to the Prince Alfred Hospital as assistant superintendent. In 1917, after his marriage to Miss Isabel Parkinson, he enlisted again, this time in the Australian Army Medical Corps, in which he served until the end of the war, most of the time in France. He obtained the rank of major before his discharge from the army.

When the war was over McLelland came to Queensland and spent six years in general practice at Maryborough, no doubt relishing the peaceful life of a country town. During this period also he developed what was to be a life-long interest in gynaecology, coming to Brisbane in 1925 to take up his appointment as junior honorary gynaecologist at the Brisbane Hospital and to practise in this specialty. For the next twenty-five years he was an active member of the hospital staff, and after his promotion to the position of senior gynaecologist in 1930 was accustomed to perform six or seven major operations twice a week. When the honorary system was abolished in 1938 McLelland was elected by his colleagues to be chairman of the new part-time staff. It is recalled that if he ever made a faulty diagnosis, he was genuinely pleased to have it corrected by one of his colleagues or juniors, and so far from being put out by the incident, he would single out the person concerned for congratulation. Although he was one of the hardest-working men on the staff, there were times during World War II, owing to shortage of beds, when McLelland felt he was not doing enough to earn his full salary. On these occasions he would sometimes return his monthly cheque to the hospital board—the only member of the staff to do so. During his long years of association with the Brisbane Hospital he did much consultant work for the Queensland Radium Institute. He was the first lecturer in gynaecology to be appointed on the newly created faculty of medicine in the University of Queensland in 1939 and held this appointment for nine years. On the faculty he strove hard, sometimes violently, to prevent clinical teaching becoming overshadowed by pre-clinical subjects and was largely responsible for the appointment of the "teaching registrars" at the hospital.

Honours came his way. He was elected a Fellow of the Royal Australasian College of Surgeons and a Member and later a Fellow of the Royal College of Obstetricians and

Gynaecologists. On his retirement from the Brisbane Hospital in 1949 he was appointed consultant gynaecologist.

McLelland was a voracious reader, being interested in art and literature and especially in psychology. His studies in this subject led him to be particularly concerned with the psychosomatic aspect of his specialty, and he gave psychological lectures to the students for some years after he resigned the lectureship in gynaecology. He served his colleagues as a British Medical Association Branch councillor for many years.

Hugh McLelland lived to see his daughter established as a research worker in the department of social studies at the University of Sydney and his son in medical practice in Brisbane. His wife, who gave his anaesthetics for many years, also survives him. By his colleagues he is remembered for his moral courage and sense of fair play, and for the kindness and encouragement he always showed to the younger men in his own specialty.

Dr. V. N. B. Willis writes: I would like to pay tribute to a very dear friend. My first meeting with Hugh McLelland was in 1917 on the transport *Marathon* on a ten weeks' voyage from Sydney to England. He was in charge of the medical officers on board and was most popular; he knew all that was going on, but never interfered unnecessarily—a delightful boss, kindly, considerate and full of quiet humour. On his coming to practice in Brisbane our friendship was resumed and grew firmer with the passing years. His medical attainments need no praise from me, but I was always interested in his amusements. He enjoyed a game of cards and was one of those rare people who "suffered fools gladly" and never complained of his luck. At billiards he was above the average, and his tennis was played with great enthusiasm. He had a full knowledge of all the finer points of the game. Later he became an enthusiastic collector of pictures by Australian artists. He derived a great deal of pleasure from his collection and, helped by his devoted wife, was happy in entertaining visiting artists, when they came to Brisbane. He was as much interested in them as in their work. He was interested also in classical music, was a great reader of philosophy and had a vast knowledge on all sorts of subjects outside of his professional sphere. He was by nature tolerant of the faults of others, as he was always able to see both sides of a question. He delighted to be of service first to his patients and then to his friends. He was the "beloved physician" and, throughout his final illness, never gave up his cheerful outlook. He always hated fuss and pretence of any kind and never courted publicity. His passing is a loss to the profession, but his kindness and tolerance will be long remembered by his many friends in all ranks of life. My deepest sympathy is expressed to his family.

Dr. Alex Murphy writes: By the death of Hugh McLelland both the medical profession and the people of Queensland suffered a grievous loss. Gynaecologist, endocrinologist, psychologist, no man ever strove harder to give only the best to those who placed their confidence in him, but above all he remained a "wise doctor", which was perhaps the main reason why he was held in such affectionate regard by his patients. During his term of office as lecturer in gynaecology he established a reputation as an excellent teacher, and no student seeking knowledge approached him in vain. Under a mask of philosophy he endeavoured to hide the intensity of his feelings, but could never conceal his contempt for the charlatan and the untruthful. In 1944 he suffered a severe coronary occlusion, but his refusal to bow to fate sustained him for nine subsequent years, eight of which were spent in an active surgical practice which might well have fatigued a younger man, and in which he never spared himself. Thus even in death he leaves a message of solace and encouragement to others similarly afflicted. He was a staunch friend to those privileged to call him such, and will be sadly missed.

"P.A.E." writes: Apart from the members of one's family and one's teachers, there are usually a few people who stand out prominently in one's life's story. Hugh Sylvester McLelland was such a person in my life. I first met him in France during World War I when I was attached to the Fourteenth Field Ambulance. At that time, although holding field rank (he was a major), McLelland was regimental medical officer to the Fifty-Ninth Battalion. Although I have no information on this, I think it likely that he applied for such an appointment. He was the only regimental medical officer whom I knew in World War I who had his majority. In those days he was a frequent visitor to the Fourteenth Field Ambulance when out of the line to see his brother-in-law, Major Charles Parkinson, and friends such as the commanding officer, the late Lieutenant-Colonel Clive Thompson. Here, having dined, he would spend the rest of

the evening in conversation or at bridge while he smoked his pipe. He took his bridge seriously and was a good player. As was his custom in all things he undertook, he got the latest information from authoritative books on the subject. Later, when I was attached to the Eighth Field Ambulance, McLelland joined the unit as second-in-command to Lieutenant-Colonel A. R. Clayton. It was here that I really got to know him. His hard work, thoroughness and enthusiasm were outstanding. He gave attention to every detail. He expected efficiency from every officer and got it, and always gave full credit where it was due. At the same time he held the respect of all. At one stage he took over the transport section of the Field Ambulance, and such was his thoroughness that I remember his spending hours on books of instruction on motor engineering in order that he might reduce to a minimal number the breakdowns which



in those days kept out of action so many ambulance wagons. Many years later, when he was discussing a motoring problem with a mechanic in a large motoring concern in Brisbane, the mechanic turned to me and said: "He knows more about the theoretical side than most of us and a good deal about the practical side."

After World War I, I remained in England, and McLelland returned to Australia. On my return in 1923 I learned that he had established himself in Maryborough, Queensland, and I used to see him whenever I was there. As was expected, he had a thriving practice in medicine, surgery and obstetrics. Feeling the need of X-ray equipment for diagnosis (at that time there was none in Maryborough), he installed an X-ray plant. He became highly proficient in X-ray technique and interpretation of X-ray pictures. He next undertook urology and became adept with the cystoscope and a skilled urologist.

In 1925 McLelland and I discussed the formation of a partnership, and towards the end of that year he sold his Maryborough practice to Dr. J. H. Bendich and we joined forces. There followed ten years of joint practice which I shall always look back upon with pleasure. McLelland's enthusiasm and efficiency were remarkable. He undertook almost all surgery, in which he displayed the greatest skill. As time went on, our practices tended towards specialization, McLelland's in obstetrics and gynaecology and mine in paediatrics, and in 1935 we separated and confined practice to our specialties. McLelland became the doyen of gynaecologists in Brisbane and in 1947 was made a Fellow of the Royal College of Obstetricians and Gynaecologists. He was already a Fellow of the Royal Australasian College of Surgeons. McLelland also became interested in psychiatry,

particularly in association with the practice of gynaecology, and this he found to be of the utmost value in the treatment of his patients. He made many original observations. When Professor Alexander Kennedy, Professor of Psychological Medicine in the University of Durham, was in Australia, he presided over a meeting in Brisbane at which contributions were presented by local practitioners. One was by McLelland, on psychiatric aspects of gynaecology. Professor Kennedy was obviously impressed and later made reference to several of McLelland's observations. In 1944, in association with Dr. J. W. C. Wand, at that time Anglican Archbishop of Brisbane, and now Bishop of London, McLelland published a valuable book entitled "Our Sexual Life" to help in the problems of sex in everyday life.

Efficient and busy as he was in his professional life, McLelland found time for many other interests. He read widely in English literature, and he had an excellent knowledge of English usage. He was well informed in Roman history. He was interested in art, especially contemporary art, and filled the walls of his home and professional rooms with fine examples. He was fond of music and the theatre and attended concerts by the masters and good stage productions.

In 1944 his friends were shocked to hear of his sudden illness. He had a coronary occlusion. He was desperately ill, but to the delight of all he made an excellent recovery. Although he knew well the ultimate prognosis of coronary occlusion, in a detached way he discussed his prospect of longevity several times. In encouragement, I told him of people whom I knew and who were still alive, though a good many years had passed since their attacks. "Well", he would say in an apparently disinterested fashion, "that gives me so many years." The end came suddenly, and he was spared a long period of confinement in bed, which I am sure would have tried his patience severely.

McLelland was an exemplary character. He was a man of great physical and moral courage. He was a staunch friend. He showed the greatest interest and kindness towards the members of my family, and we shall never forget him. He gave his best in all things he attempted, and he expected nothing but the best from others. I have been impressed by the large number of people, patients and others, who have told me with feeling, "I shall miss him".

ROBERT JAMES NIXON.

DR. H. B. CARROLL writes: Robert James Nixon, M.B., B.S., F.R.A.C.S., was born in Nabiac. He spent his early days on the land, and attended the University of Sydney in his twenties. He was a resident medical officer at Royal Prince Alfred Hospital, and then volunteered for service in the army. He started practice at Abermain, on the coalfields, and subsequently entered the practice of Dr. Walton in Petersham, Sydney, where, as general practitioner and surgeon, he worked for thirty-five years. He was appointed to the staff of Lewisham Hospital in 1927, and was later a senior surgeon on that hospital for many years, retiring in 1951. He was also a senior surgeon at South Sydney Women's Hospital. He died at Katoomba on August 28, 1953, after spending two years in semi-retirement at Wentworth Falls.

Bob Nixon will long be remembered by his patients for his kindness, understanding and devotion to his work. To his colleagues he was a loyal friend, ever ready to lend a helping hand. His pleasing personality endeared him to his many friends, by whom he will be sadly missed. He is survived by his wife, Mrs. Allison Nixon, and by a son and three daughters of his first marriage to Muriel Bowden Fletcher. One daughter, Dr. Eleanor Nixon, is practising in Petersham.

GEORGE ALEXANDER BREW.

DR. KEVIN O'DAY writes: The death of Dr. George Alexander Brew on October 12 is a loss to Saint Vincent's Hospital and to Victorian ophthalmology. Few who listened to his witty speech at the annual dinner of the ophthalmological Society in Hobart two years ago were aware that he had already entered upon his final illness. Nevertheless, he accepted the office of President of the Society for the ensuing year and carried out the duties of his office with all his characteristic cheerfulness and enthusiasm. The courage with which he bore the heavy cross which was laid upon

him won him the admiration of all with whom he came in contact.

George Brew had many interests not only in his profession but outside of it. In his earlier years he applied himself to the study of the visual field. More recently he had evolved a standardized technique in the surgery of squint and was preparing to publish his results when illness intervened. Woodwork and photography were among his many hobbies, as well as a deep interest in Australian.

To his widow, his son, Dr. Peter Brew, and his daughters his friends and colleagues offer their heartfelt sympathy. *Requiescat in pace.*

RICHARD FRANCIS O'SULLIVAN.

The following appreciation of the late Dr. Richard Francis O'Sullivan has been received from Dr. F. L. Davies.

Richard Francis O'Sullivan, who died on October 9, 1953, at the age of sixty-seven years, had for many years carried on a very busy practice as a gynaecologist. It was natural that he should have practised in this specialty as his father, Dr. M. U. O'Sullivan, had been—in his day—one of the leading specialists in gynaecology, holding honorary posts both at the Women's Hospital and at Saint Vincent's Hospital. Dick O'Sullivan followed in his father's footsteps in that he, in turn, became senior gynaecologist at Saint Vincent's Hospital.

After qualifying as M.B., B.S. at the University of Melbourne he acted as resident medical officer at Ballarat. He then went abroad in company with the late Professor A. Watson, of Adelaide, who was a very close friend and adviser of his father. Travelling with such an enthusiast in all medical matters as Professor Watson must have been an experience which few young graduates have enjoyed, and must have instilled knowledge and evoked ambitions which would be life-long. During this period of travel he attained the Fellowship of the Royal College of Surgeons of England and returned well equipped to commence practice. On his return he worked in association with his father, and on his father's death he carried on the specialist practice.

In the 1914-1919 war he was associated with General Featherstone in his work as Director-General of Medical Services.

At the Saint Vincent's Hospital his work was known to a large number of practitioners throughout Victoria, and many in other Australian States, and they frequently attended his operating sessions. These were always very happy gatherings, because Dr. O'Sullivan could provide entertainment both at his work, which was that of a master craftsman, and in the periods between operation, when his wit and humour—combined with intense sarcasm—would not allow of a dull moment. He had some excellent films of his operations taken by Dr. Frank Tate, and these showed that he was a surgeon of no mean order.

In his time off from work nothing pleased him better than getting right away from the city and city folk and mixing with the far-away country people. He had a great love for the heart of Australia, and, here again, a movie taken by Dr. Tate showed him in his element with the aborigines of Australia. Of later years, when his health was giving out, one missed his old-time sparkle; but even within a few months of his death he went for a holiday trip to Alice Springs, hoping that the quiet and rest would give him back some of his former zest—but it was not to be.

The sympathy of his colleagues goes out to his widow and brother, Dr. Brendon O'Sullivan.

Dr. F. J. Colahan writes: As a small and very unhappy boy of seven years of age, I found my first day at school was made bearable by Dick O'Sullivan's kindly "fathering" of me. From that distant day I was closely associated with him, both professionally and socially, and it was natural that I had a deep affection for him.

On his return from abroad in 1913 he was appointed outpatient gynaecologist to Saint Vincent's Hospital, and in 1914 he was appointed gynaecologist. He held this position till his retirement in 1946, having thus been on the honorary medical staff of the hospital for thirty-three years. During these years he occupied many of the responsible positions at the hospital, having been chairman of the honorary medical staff for more than one term of office, and also dean of the clinical school. His natural inclination was towards operative gynaecology, and he readily developed a technique that was spectacular and unsurpassed—an excellent technicolour film, which was made by Dr. F. Tate,

demonstrates the perfection and skill he displayed in performing a hysterectomy.

Dick O'Sullivan was one of the most colourful personalities in medical circles in Melbourne, and one whose name will certainly become a legend, especially in the hospital where he laboured for so many years. His opinions, though not always readily accepted by all, were usually expressed with dogmatism and vehemence, and, as a consequence, his presence at a meeting enlivened it and gave an air of uncertainty to the discussions. During the early war years he worked energetically and enthusiastically as dean of the clinical school of Saint Vincent's Hospital, and, largely as a result of this added burden to his work, his health suffered greatly. For some time, increasing ill health made it more and more difficult for him to carry on at his accustomed tempo, and one missed the old vivacity that was characteristic of him.

His interests, outside his profession, were mainly his trips to the high plains of Victoria and to Central Australia. He also took a keen interest in racing and, as well as being a member of all the metropolitan clubs, he owned several racehorses.

Dick O'Sullivan never spared himself, and no effort was so great that he would not gladly burden himself with it, in order to assist anyone who sought his aid. He had a cheerful disposition and a great sense of humour, which endeared him to his many friends and patients. Our profound sympathy goes out to his widow and relatives.

Naval, Military and Air Force.

APPOINTMENTS.

The undermentioned appointments, changes et cetera have been promulgated in the *Commonwealth of Australia Gazette*, Number 70, of November 5, 1953.

AUSTRALIAN MILITARY FORCES.

Regular Army Special Reserve.

Royal Australian Army Medical Corps.

NX700390 Captain B. J. Ireland is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (2nd Military District), 22nd September, 1953.

VX700325 Major (Honorary Lieutenant-Colonel) K. J. J. Dorney, D.S.O., is transferred to the Citizen Military Forces, 1st July, 1953.

Citizen Military Forces.

Northern Command: First Military District.

Royal Australian Army Medical Corps (Medical).—1/61806 Lieutenant-Colonel M. R. Gold is borne supernumerary to the authorized establishment of Lieutenant-Colonels with pay and allowances of Major (at own request), 24th August, 1953. 1/71801 Lieutenant-Colonel I. M. Mackerras is appointed from the Reserve of Officers, 2nd September, 1953, and is borne supernumerary to the authorized establishment of Lieutenant-Colonels with pay and allowances of Major (at own request). The age for retirement of 1/71801 Lieutenant-Colonel I. M. Mackerras is extended until 19th September, 1955. To be Captain (provisionally), 23rd September, 1953: 1/62913 Cyril Ignatius Wilkinson.

1/61767 Major (Honorary Lieutenant-Colonel) K. J. J. Dorney, D.S.O., is transferred from the Regular Army Special Reserve, and to be Lieutenant-Colonel, 1st July, 1953, with regimental seniority next after 1/43713 Lieutenant-Colonel A. Fryberg, M.B.E. 1/61767 Lieutenant-Colonel K. J. J. Dorney, D.S.O., is appointed to command 9th Field Ambulance, 24th August, 1953. 1/61806 Lieutenant-Colonel M. R. Gold relinquishes command 9th Field Ambulance, 24th August, 1953.

Eastern Command: Second Military District.

Royal Australian Army Medical Corps (Medical).—The following officers are appointed from the Reserve of Officers: 2/50436 Captain J. J. G. McGirr, 13th July, 1953, and 2/127044 Honorary Captain K. L. Collins, and to be Captain (provisionally), 8th September, 1953.

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED NOVEMBER 7, 1953.¹

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	4(2)	..	..	..	1	..	..	..	5
Amoebiasis .. ..	..	..	..	..	1	..	..	..	1
Ancylostomiasis .. ..	..	..	1	..	..	..	4	..	5
Anthrax .. ..	..	..	1(1)	..	..	..	..	..	1
Bilharziasis .. ..	..	..	..	..	..	..	..	..	..
Brucellosis .. ..	..	1	..	..	..	..	..	..	1
Cholera .. ..	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	2(1)	..	..	..	..	..	..	..	2
Dengue .. ..	..	..	..	..	..	..	..	..	..
Diarrhoea (Infantile) ..	10(9)	4(4)	9(8)	..	..	..	1	..	24
Diphtheria	3	..	..	1(1)	..	..	..	..	4
Dysentery (Bacillary) ..	..	..	2(2)	5(1)	1(1)	..	..	..	8
Encephalitis .. ..	..	..	..	..	..	..	..	..	..
Filariasis .. ..	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid .. ..	..	..	..	..	..	..	..	..	..
Infective Hepatitis .. ..	..	8(5)	..	..	4(4)	..	..	..	12
Lead Poisoning .. ..	..	..	..	..	..	..	..	..	..
Leprosy .. ..	..	1	2	..	..	..	..	..	3
Leptospirosis .. ..	..	..	2	..	..	..	..	..	2
Malaria .. ..	..	..	..	..	..	..	..	..	..
Meningococcal Infection ..	4(3)	3(1)	..	1(1)	..	..	..	..	8
Ophthalmia .. ..	..	..	..	..	..	..	..	..	..
Ornithosis .. ..	..	..	..	..	..	..	..	..	..
Paratyphoid .. ..	..	..	..	..	..	..	..	..	..
Plague .. ..	..	..	..	..	..	..	..	..	..
Poliomyelitis	14(5)	1(1)	1	6(4)	3	..	..	..	25
Puerperal Fever .. ..	..	..	..	..	1(1)	..	..	..	1
Rubella .. ..	..	10(8)	..	..	26(23)	..	..	..	36
Salmonella Infection .. ..	..	..	..	..	..	..	..	..	..
Scarlet Fever	11(9)	15(11)	19(13)	3(2)	1(1)	..	..	1	50
Smallpox .. ..	..	..	..	..	..	..	..	..	..
Tetanus .. ..	..	..	1(1)	..	1(1)	..	..	..	2
Trachoma .. ..	..	..	..	..	..	..	..	..	..
Trichinosis .. ..	..	..	..	..	..	..	..	..	..
Tuberculosis	58(49)	17(13)	12(3)	9(5)	16(9)	9(2)	..	..	121
Typhoid Fever	2(2)	..	..	..	..	..	..	..	2
Typhus (Flea-, Mite- and Tick-borne) .. ..	..	..	1	..	..	..	..	..	1
Typhus (Louse-borne) ..	..	..	..	..	..	..	..	..	..
Yellow Fever .. ..	..	..	..	..	..	..	..	..	..

¹ Figures in parentheses are those for the metropolitan area.

2/126996 Major T. J. Ritchie, E.D., is appointed to command 5th Field Ambulance, and to be Temporary Lieutenant-Colonel, 28th September, 1953. 2/126470 Lieutenant-Colonel R. E. Wherrett relinquishes command of 5th Field Ambulance, and is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (2nd Military District), 28th September, 1953.

Southern Command: Third Military District.

Royal Australian Army Medical Corps (Medical).—6/15537 Captain (provisionally) W. L. Elrick relinquishes the provisional rank of Captain and is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (3rd Military District), in the honorary rank of Captain, 19th August, 1953. To be Captain (provisionally), 2nd October, 1953: 3/50198 Kingsley Wallis Mills.

Western Command: Fifth Military District.

Royal Australian Army Medical Corps (Medical).—To be Captain, 1st September, 1953: 5/21578 Charles Stuart, M.C.

Tasmania Command: Sixth Military District.

Royal Australian Army Medical Corps (Medical).—6/15233 Captain (provisionally) K. G. Ball relinquishes the provisional rank of Captain and is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (6th Military District) in the honorary rank of Captain, 31st August, 1953.

6/15218 Captain J. V. McGrath is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (6th Military District), 16th September, 1953.

Reserve Citizen Military Forces.

Royal Australian Army Medical Corps.

1st Military District.—To be Honorary Captains: Herbert Henry Moy, 18th September, 1953, and Kevin James Murphy and John Lindsay Ward, 21st September, 1953.

2nd Military District.—The appointment of Honorary Captain N. H. Korner is terminated, 20th July, 1953. To be Honorary Captains: Nils Herbert Korner, 6th July, 1953, Richard Walter May, 31st August, 1953, Leslie Lazarus and James Robert Tudehope, 18th September, 1953, and Matthew John Martin and Clarice May Smith, 21st September, 1953.

3rd Military District.—To be Honorary Captains: William Stephen Coglein, 15th August, 1953, David Vernon Rodda, 16th August, 1953, and Clyde Arthur George Scaife, 31st August, 1953.

5th Military District.—To be Honorary Captain, 12th September, 1953: Robert Francis Forkin.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Clinical Meeting at Balmoral Naval Hospital.

The Post-Graduate Committee in Medicine in the University of Sydney announces that a clinical meeting will be held at the Balmoral Navy Hospital on Tuesday, January 26, 1954, at 2 p.m., when Dr. Eric Hedberg will speak on "Biliary Surgery". Clinical cases will be shown after the lecture. All members of the medical profession are invited to attend.

Notice.

CLINICO-PATHOLOGICAL MEETINGS AT SYDNEY HOSPITAL.

CLINICO-PATHOLOGICAL MEETINGS will be held at Sydney Hospital during 1954, commencing in January, on the third Tuesday in each month at 5 p.m. in the Maitland Lecture Hall. The meeting to have been held in December, 1953, has now been cancelled.

CRICKET.

THE annual doctors *versus* dentists cricket match will be played at Sydney Cricket Ground Number 1 on Wednesday, January 20, 1954, commencing at 10.30 a.m. Any doctors wishing to be considered for selection in this team are requested to contact either Dr. W. L. Calov (BW 7208 or FM 4237) or Dr. F. M. Farrar (BW 1291 or JJ 1818) before Wednesday, January 13, 1954.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Borger, James Paul, M.B., B.S., 1952 (Univ. Sydney), 69 Cumberland Street, Cessnock, New South Wales.

Van den Berg, William Jacob, M.D., 1942 (Univ. Groningen), registered in accordance with the provisions of Section 17 (b) of the *Medical Practitioners Act, 1938-1950*, 47 Carabella Street, Kirribilli, New South Wales.

Deaths.

THE following death has been announced:

HARPER.—George Craig Harper, on November 26, 1953.

Diary for the Month.

DEC. 15.—New South Wales Branch, B.M.A.: Ethics Committee.

DEC. 15.—New South Wales Branch, B.M.A.: Medical Politics Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federal Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178 North Terrace, Adelaide): All Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205 Saint George's Terrace, Perth): Norseman Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and book-sellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rate is £5 per annum within Australia and the British Commonwealth of Nations, and £6 10s. per annum within America and foreign countries, payable in advance.

